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# The attachment of adult women to the Italian labour market in the shadow of COVID-19<sup>☆</sup>

Davide Fiaschi<sup>a</sup>, Cristina Tealdi<sup>b,c,\*</sup><sup>a</sup> Dipartimento di Economia e Management, University of Pisa, REMARC and Centro DAGUM, Via Ridolfi 10, Pisa 56124, Italy<sup>b</sup> Edinburgh Business School, Heriot-Watt University, Edinburgh EH14 4AS, UK<sup>c</sup> IZA Institute of Labor, Germany

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## ABSTRACT

We investigate the attachment to the labour market of women in their 30s, who are combining career and family choices, through their reactions to an exogenous, and potentially symmetric shock, such as the COVID-19 pandemic. We find that in Italy a large number of women with small children, living in the North, left permanent (and temporary) employment and became inactive in 2020. Despite the short period of observation after the burst of the pandemic, the identified impacts appear large and persistent, particularly with respect to the men of the same age. We argue that this evidence is ascribable to specific regional socio-cultural factors, which foreshadow a potential long-term detrimental impact on female labour force participation.

## 1. Introduction

The compatibility of labour market participation and childcare still represents a serious challenge for women. While in the past having a career and having a family were deemed as mutually exclusive choices, i.e., opting for one would imply giving up on the other, today, most women in developed countries aim to have both a family and a successful career (Doepke et al., 2022). The combination of career and family has led to a substantial change in the life cycle of women's labour force participation for the most recent cohorts, which looks relatively high and fairly flat, similar to that of men's (Fernández et al., 2004), but with a lower and squishier middle in their 30s (Lafond et al., 2021). In this paper, we use the burst of COVID-19 pandemic, which appears as an exogenous and potentially symmetric shock, to analyse the factors affecting the attachment to the labour market of women, in particular those between the age of 30 and 39.

For decades policymakers and researchers have been interested in the determinants of female labour force participation (Goldin and Katz, 2002). Labour force participation increased significantly during the last century; many reasons have been identified behind this phenomenon, ranging from the diffusion of the contraceptive pills, the electricity revolution, the relative change in returns to experience com-

pared with the male's, the decrease in the gender wage gap, and the discovery of the infant formula (Albanesi and Olivetti, 2016; Goldin and Katz, 2002; Greenwood et al., 2005; Jones et al., 2015; Olivetti, 2006). The levelling off of female labour force participation in the late 1990s has been attributed to the lack of appropriate policies to support families (Blau and Kahn, 2013), the diffusion of long-hour occupations (Goldin, 2021) and the marriage patterns of women to highly educated and high-income husbands (Albanesi and Kim, 2021). The recent 'sagging middle' life cycle seems to be ascribable to the lack or ineffectiveness of "family-friendly" policies (Blau and Kahn, 2013; Olivetti and Petrongolo, 2017) and the rise in "greedy jobs", which are increasingly dominant among highly educated workers (Goldin, 2021). The literature points to a number of factors which could facilitate the combination of career and childcare responsibilities, among which: (i) policies in support of families, such as longer maternal and paternal leaves, reduction of childcare costs, increased availability of pre-school opportunities (Andresen and Havnes, 2019; Barua, 2014; Bettendorf et al., 2015; Compton and Pollak, 2014; Givord and Marbot, 2015; Huebener et al., 2020); (ii) favourable social norms, such as the equal gender division of housework and childcare (Del Boca et al., 2020; Myong et al., 2021); and (iii) labour markets which are sufficiently flexible (Da Rocha and Fuster, 2006; Del Boca, 2002). However, the overlapping of various

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\* Corresponding author at: Edinburgh Business School, Heriot-Watt University, EH14 4AS Edinburgh, UK.

E-mail addresses: [davide.fiaschi@unipi.it](mailto:davide.fiaschi@unipi.it) (D. Fiaschi), [c.tealdi@hw.ac.uk](mailto:c.tealdi@hw.ac.uk) (C. Tealdi).

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**Table 1**

Changes in the inactive shares between quarter IV of 2019 and quarter IV of 2020 by category of individuals.

	Females		Males	
	North	South	North	South
20–24	<b>0.034***</b> (0.000)	0.013 (0.143)	<b>0.018***</b> (0.000)	<b>0.016*</b> (0.079)
25–29	<b>0.017**</b> (0.022)	<b>0.058***</b> (0.000)	<b>0.020***</b> (0.000)	<b>0.017*</b> (0.065)
30–39	<b>0.034***</b> (0.000)	0.010 (0.154)	0.003 (0.127)	<b>0.027***</b> (0.000)
40–49	<b>0.020***</b> (0.000)	0.011 (0.116)	<b>0.013***</b> (0.000)	<b>0.016***</b> (0.003)

Note: The attained significance levels (ASL) of the null hypothesis of equality between the shares in the two periods computed using 1000 bootstraps are reported in parenthesis (Efron and Tibshirani, 1994, p.220).

North includes regions in the North and the Center.

\*ASL<0.1; \*\*ASL<0.05; \*\*\*ASL<0.01.

policies in support of families, heterogeneous socio-cultural factors, and region-specific economic factors makes it difficult to quantify the contribution of each single determinant to the labour force participation of women (Cascio et al., 2015; Olivetti and Petrongolo, 2017).

We investigate the attachment of women to the Italian labour market, specifically those in the 30–39 age category, in the period 2013–2020, i.e., before and during the COVID-19 pandemic, by estimating transition probabilities to and from inactivity. The COVID-19 shock appears well-suited for our aim as it was (i) unexpected and (ii) potentially symmetric, thus fit for the analysis of its impact as purified by potential inter-temporal effects linked to the business cycle and long-term planning of individuals.<sup>1</sup> Moreover, the Italian labour market displays large heterogeneities, with vast and persistent regional disparities: industrial activities are mostly concentrated in the North, while agriculture and commerce are prevalent in Southern regions (Tables 13 and 14 in Appendix G and OECD, 2019). Italy also ranks among the weakest of OECD countries regarding job quantity, defined as employment, unemployment and underemployment (OECD, 2018), reflecting persistently large gender employment gaps, with a remarkably low female labour force participation in the South (Agovino et al., 2019). Specifically, while in the North the labour force participation of 30–39 females ranges between 75% and 80%, in line with the US rate (Lafond et al., 2021, Fig. 1), in the South it is as low as 52%, despite a comparable total fertility rate of 1.3 in the North and 1.25 in the South (ISTAT, 2019).

Withstanding these different conditions, the COVID-19 shock had asymmetric effects across categories of individuals by age, gender and geographical location, but their size and persistence over time are more surprising.<sup>2</sup> In particular, we find large flows of females in their 30s with small children who live in the North of Italy, moving from both permanent and temporary employment to inactivity during the whole pandemic year of 2020. In the South, instead, where female labour force participation was already very low, we do not find any evidence of such phenomenon. Despite the data availability being limited to the four quarters of 2020, the identified effects appear large and persistent, in particular if compared to males in the same age cohort. We argue that while in the North the combination of economic, social and cultural factors allows for an easier combination of career and family, this exposes

women in this area to a high risk, i.e., the female labour market attachment is weaker. Such explanation seems to be strongly anchored to the different regional female socio-cultural factors.

The rest of the paper is organized as follows. Section 2 illustrates the data and the methodology used. Section 3 provides evidence of large heterogeneity in the Italian labour market before the COVID-19 pandemic, while Section 4 analyses the determinants of the changes in female labour force participation due to the pandemic. Finally, Section 5 concludes the paper and discusses potential explanations for our findings.

## 2. Data and methodology

We use Italian quarterly longitudinal labour force data as provided by the Italian Institute of Statistics (ISTAT) for the period 2013 (quarter I) to 2020 (quarter IV).<sup>3</sup> The Italian Labour Force Survey (LFS) follows a simple rotating sample design where households participate for two consecutive quarters, exit for the following two quarters, and come back in the sample for other two consecutive quarters. As a result, 50% of the households, interviewed in a quarter, are re-interviewed after three months, 50% after twelve months, 25% after nine and fifteen months. This rotation scheme allows to obtain 3 months longitudinal data, which include almost 50% of the original sample.

The longitudinal feature of these data is essential for achieving a complete picture of significant economic phenomena of labour market mobility. Per each individual who has been interviewed, we observe a large number of individual and labour market characteristics at the time of the interview and three months before. On average, approximately 70,000 individuals are interviewed each quarter, of which 45,000 are part of the working age population. The average quarterly inflow of younger individuals in the working age population is 0.3%, while the average quarterly outflow of older individuals from the working age population is 0.4%, which implies a (almost) constant working age population within quarters.

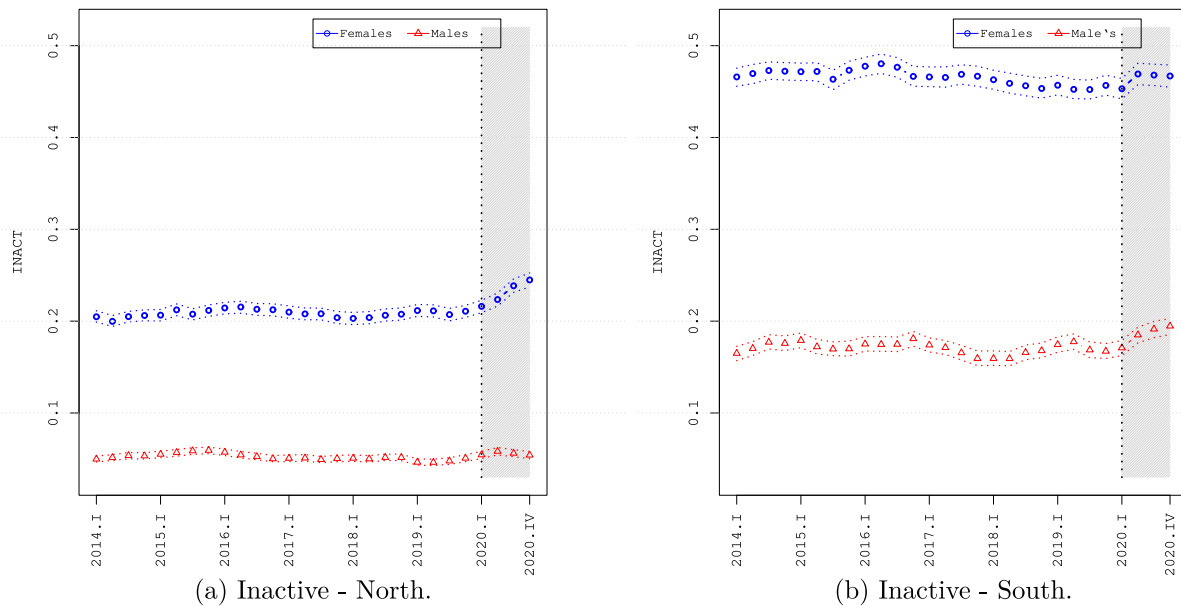
The dynamics of the labour market is described by Markov Chains with discrete states in discrete time. Our dataset allows to consider quarters as unit of time and to define seven labour market states: *permanent* (PE), *temporary* (TE), *self-employment* (SE), *unemployment* (U), the *fur-lough scheme* (FS), *education* (EDU) and *inactivity* (INACT). The dynamics are represented through a *Transition Probability Matrix* (TPM), which shows both persistence in each labour market state and the probability of transition from one state to another, and fully characterizes the dynamics of the shares of the whole population in each state. In particular, the shares of individuals in different states provide a picture of the long-term trends, as they take longer to react to shocks, while the transition probabilities inform about the sudden impact of the (pandemic) shock. We compute the labour market flows by calculating the quarter-on-quarter transitions made by individuals between labour market states. In the analysis we take the first quarter of 2020, which marks the time of the initial spread of the virus, as the period when the dynamics of the Italian labour market is expected to change. The inferential analysis on the shares and transition probabilities is computed via bootstrap using 1000 draws from the original sample.

Important data limitations are to be mentioned. First, the point-in-time measurement of the worker's labour market state fails to capture transitions within the period (quarter). For instance, if an employed worker becomes unemployed and finds a new job within a quarter, we do not observe those transitions in our data. Second, the available data stop at quarter IV of 2020, while it would be desirable to have data also for 2021 to explore the further persistence of pandemic shock. Third, we do not have information on the household composition (as we only observe the household size), individual social attitudes and beliefs, and

<sup>1</sup> Appendix A for a detailed description of timing and management of the COVID-19 crisis in Italy.

<sup>2</sup> The literature on the asymmetric effects of the pandemic on different categories of individuals is large, see, e.g., Adams-Prassl et al. (2020); Albanesi and Kim (2021); Alon et al. (2021); Blueborn et al. (2021); Casarico and Lattanzio (2020); Caselli et al. (2021); Chetty et al. (2020); Dang and Nguyen (2021); Fabrizio et al. (2021); Fiaschi and Tealdi (2022); Hupkau and Petrongolo (2020); Shibata (2020); Zamarrò et al. (2020).

<sup>3</sup> Data for the period 2013 (quarter I) to 2020 (quarter IV) are available upon request at <https://www.istat.it/it/archivio/185540>. All codes and datasets used in the analysis are available at [https://people.unipi.it/davide\\_fiaschi/ricerca/](https://people.unipi.it/davide_fiaschi/ricerca/).



**Fig. 1.** Share of inactive individuals aged 30–39 in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

parents' characteristics. For this reason, in the last part of our analysis, we use data from the European Labour Force, which contains detailed information on the number and age of children, and the European Value Survey, from which we draw information on socio-cultural factors of individuals at regional level. Finally, the short longitudinal span of the data, having longitudinal observations only in two consecutive quarters, constrains our analysis to be based on a Markovian process of order one.

### 3. The female labour market before the COVID-19 pandemic

The Italian labour market pre-COVID-19 presented specific characteristics, which we deem crucial to understand the impact of the pandemic shock on different categories of individuals. In particular, women participate much less to the labour market compared to men, but women in the South also participate much less to the labour market compared to women in the North. As reported in Fig. 1, before the pandemic, in the North, 20% of females were inactive compared to 5% of males; on the contrary, in the South, 45% of females and 15% of males were not participating to labour market.

These patterns have their roots at the early stages of the lives of women and men. Fig. 5 in Appendix B.1 shows that already the 15–19 age cohort presents the first signs of heterogeneity by geographical area. While we do not observe significant differences by gender, the share of inactive individuals in the North ranges around 3.5% and 4.5%, while in the South it is already as high as 9%. The gender gap starts appearing among the 20–24 age cohort, particularly in the North, where the female inactive share is between 10% and 12% compared to a range of 8% to 10% for males. In the South, the gender gap is less relevant, but the average inactive share is as high as 22%. The gap by gender and geographical location becomes significant among the 25–29 age cohort: 20% of females in the North are inactive, compared to 7% of males and 35% of females in the South are inactive compared to 20% of males.

The bleeding of women into the inactivity state almost stops with the 25–29 age cohort in the North, and the share of inactive women stabilizes around 20% among older cohorts. A similar pattern is observed for males in both geographical areas. However, the share of inactivity continues to grow for women in the South: it is as high as 45% among the 30–39 age cohort and 50% among the 40–49 age cohort (Figs. 6–8 in Appendix B.1). Hence, the decision to leave the labour force for

many women starts very early in life in the South, and it continues as they grow older and across different stages of life. In the North, instead, the decision to participate to the labour force for women mainly happens in the early stage of life, below the age of 30. Interestingly, the median age of the first-child birth is slightly higher than 30 in both geographical locations, with minimal differences across regions of the North and the South (Table 8 in Appendix B.1). This evidence, paired with the statistics on inactivity, suggests that the birth of a child does not affect significantly the labour market participation of women in the North, while it represents an important determinant in the South. The literature has already identified significant gender and geographical differences as structural features of the Italian labour market (Bertola and Garibaldi, 2003). Women, on average, are found to have a lower attachment to the labour force, together with a lower commitment to the labour market compared to men (Schiattarella and Piacentini, 2018). The North-South divide characterizes many dimensions of the economic and cultural life in Italy, but it is particularly striking in women's work. Women in Southern Italy are comparatively more likely not to work and not to return to the labour market after marriage or childbearing. On average, 30% of Italian mothers in employment stop working to care for children or other relatives, and of these only about 12% go back to work at some point in life (Bettio and Pastore, 2017). The latter is still much lower in the Italian South, due to the predominant role of the male breadwinner model (Baussola and Mussida, 2014; Pacelli et al., 2013; Picchio et al., 2021).

This evidence points to the presence of a strong geographical heterogeneity in the labour market even before the COVID-19 pandemic, with female inactivity rates being much higher in the South across all age cohorts, withstanding similar fertility rates.

### 4. Female labour market participation during the COVID-19 pandemic

The impact of the COVID-19 pandemic on the labour market of females aged 30–39 has been heterogeneous in the North and South of Italy. Table 1 reports the difference between the inactive share in quarter IV of 2020 and the same quarter one year before for males and females



across age categories and geographical areas.<sup>4</sup> In quarter IV of 2020, females in the North of Italy had a larger presence in the inactive state across all age categories, although the increase was particularly large for the 20–24 and 30–39 age cohorts. Only for the 25–29 age cohort, the share of inactive females increased across geographical locations, but more in the South.<sup>5</sup> By comparison, the shares of males living in the North of Italy in the inactive state increased in quarter IV of 2020 across all age groups (except for the 30–39 age cohort) with respect to the same quarter one year before. Similar patterns are displayed by males living in the South: across all age categories the share of males in the inactive state is higher. Nevertheless, the magnitude of the changes is smaller for males, compared to females, within the same age category.

A further understanding of the effect of the pandemic is given by the changes in the transition probabilities across labour market states (Figs. 9–12 in Appendix B.2, in particular by comparing the observed data with the counterfactual scenario of no pandemic shock, i.e., quarterly transition probabilities for categories of individuals across demographic groups against the forecasted quarterly transition probabilities during the pandemic quarters (quarter I of 2020–quarter IV of 2020).<sup>6</sup> In order to understand whether the increased female inactivity rate is due to discouraged unemployed workers who stopped looking for jobs, or to employed workers who left their jobs, we focus on the transitions from temporary and permanent employment and unemployment to the inactive state.

As regards whether an increased number of workers became pessimistic about the probability to find a job and gave up on job search during the pandemic, Panel B of Fig. 2 reports the transition probabilities from unemployment to the inactive state for females in the 30–39 age cohort. Across both geographical locations these probabilities have significantly increased in quarter II of 2020, compared to the forecasted probabilities. However, the change appears to be temporary as the transition probabilities went back to the pre-pandemic values in quarter IV of 2020. Females in the 25–29 age cohort (Panel A of Fig. 2) show increased transition probabilities in both geographical locations, which persisted until quarter III of 2020. Females in the 40–49 age cohort (Panel C of Fig. 2) also appear to have transited much more from unemployment to inactivity in both locations, but while being a temporary change for women in the North, it persisted until quarter IV of 2020 among females in the South. Similar patterns are observed among 30–39 males in the South, while among both males and females in the North, we do not observe persistence (Fig. 15 in Appendix E). To summarize, while at the outburst of the pandemic female unemployed workers across different locations and age categories got discouraged to some degree and left the labour market, the higher transition rates from unemployment to inactivity persisted mostly for females aged 40–49 in the South.

As regards the effect of the pandemic on the decision to leave employment, the pandemic significantly increased the transition probabilities from permanent employment to the inactive state for females in the 30–39 age category living in the North (Fig. 3). In quarter III of 2020 the probability of females aged 30–39 to transit from permanent employment to the inactive state jumped to 2.5% compared to a forecasted probability of 1.7%. Similar patterns are found for the probability to transit from temporary employment to the inactive state: it jumped to 25% compared to the forecasted 10% (Fig. 13 in Appendix E).

On the contrary, the transition probabilities from temporary and permanent employment for women in the 30–39 age group living in the

**Table 2**

Percentage of females with at least one child below the age of 11 by geographical area and employment status in 2019.

	Age 30–39		Age 40–49	
	North	South	North	South
Employed	64.8	33.1	73.5	43.2
Permanent	47.5	19.1	55.0	28.1
Temporary	8.7	7.1	6.4	5.9
Self-employed	8.6	6.9	12.1	9.2
Unemployed	6.2	10.2	5.4	8.4
Inactive	28.2	55.7	20.2	48.0
Total (in 000s)	1270	736	1249	559

Note: North includes regions in the North and the Center.

Source: ELFS data.

South do not show any significant change (Figs. 3 and 13 in Appendix E). Moreover, the transition probabilities from permanent employment to inactivity for women in the 40–49 age group living in the North increased just in the first three quarters of 2022, while no significant changes happened for women living in the South (Figs. 3 and 13 in Appendix E). Finally, no changes are observed in the transition probabilities of males across different age categories (Figs. 11 and 12 in Appendix B.1 and Figs. 16 and 17 in Appendix E).

To summarize, during the outburst of the pandemic there was a significant outflow of women in the age 30–39 in the North from permanent and temporary employment to inactivity. On the contrary, there is no significant evidence of the same phenomenon among women in other age categories, and among males and females in the 30–39 age group in the South.

#### 4.1. Female labour market participation and household composition

A possible explanation of the significant and negative impact of the pandemic on female labour force participation is the role played by childcare responsibilities. Across all Italian regions, more than 60% of women have children when they are between 30 and 40 years old (Table 9 in the Appendix D). Unfortunately, the Labour Force Survey (LFS) does not provide information about the number and age of children, but only about the household size. Therefore, we use the European Labour Force Survey data for Italy for 2019 to compute the shares of females in the age cohorts 30–39 and 40–49 with at least one child below the age of 11, i.e., an age below which children need the presence of their parents, by employment status and geographical location (Table 2).<sup>7</sup>

In the North, 47.5% of females in the 30–39 age cohort with at least one young child is employed on a permanent contract, compared to 19.1% in the South. While the share on temporary employment and self-employment is comparable, and the share in unemployment is slightly higher in the South (10.2% against 6.2%), the striking difference is in the share of inactive females, which is much higher in the South, i.e., 55.7% versus 28.2%. The 40–49 age cohort shows very similar patterns.<sup>8</sup>

Table 3 reports the shares of females with at least one child below the age of 11 by household size, geographical area and age cohort. Among females in the 30–39 age cohort, 81.2% live in a household with more than two components in the North, and 71.5% in the South. Hence, household size (the only information available in LFS on individuals' family) appears to be a good proxy for the presence of small children in the household.

Using the household size of more than 2 members as a cutoff to split the sample of females, the estimated transition probabilities from

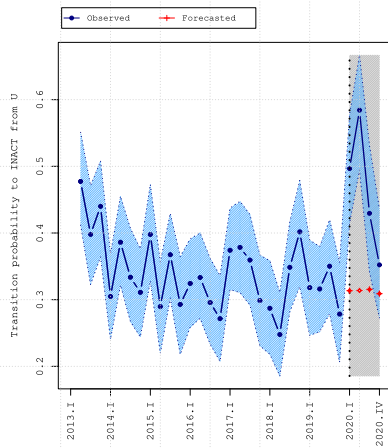
<sup>4</sup> In Appendix E.1 we report the full set of statistics for the seven labour states and the same statistics comparing the shares of individuals by age group in quarter III of 2020 with the same quarter one year before.

<sup>5</sup> Although the focus of our analysis is on females in older age categories, we provide in Appendix C some explanations for this result.

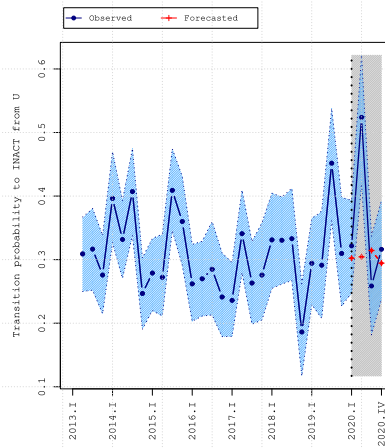
<sup>6</sup> The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 quarter I–2019 quarter IV.

<sup>7</sup> In Appendix F we report similar statistics for 2020.

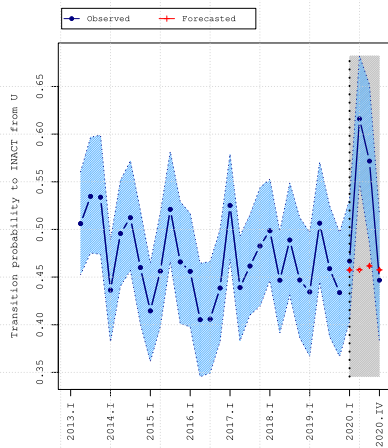
<sup>8</sup> The same statistics for 2020 are reported in Table 12 in Appendix E.1.

**Panel A: Age 25-29.**

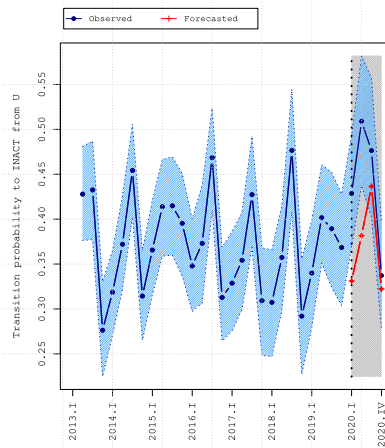
(a) South.



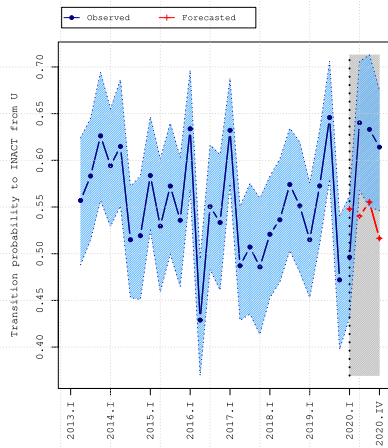
(b) North.

**Panel B: Age 30-39.**

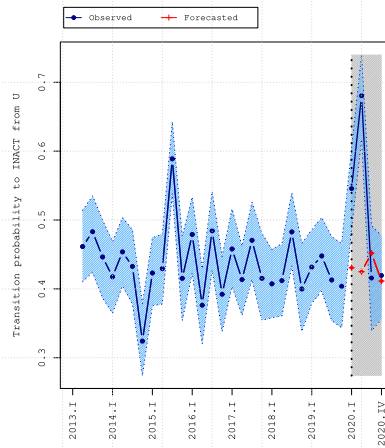
(c) South.



(d) North.

**Panel C: Age 40-49.**

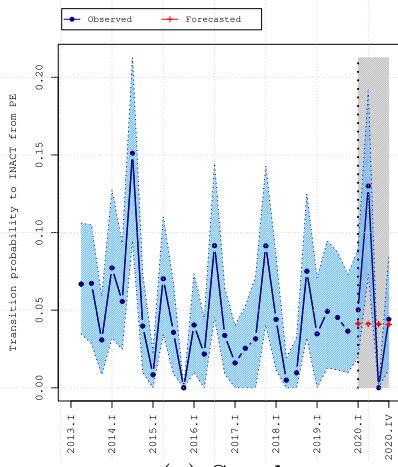
(e) South.



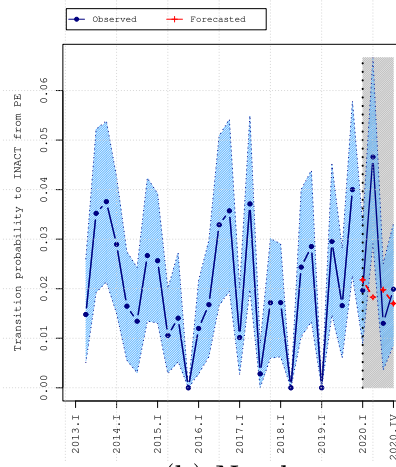
(f) North.

**Fig. 2.** Transition probabilities of females from unemployment to the inactive state by age groups.

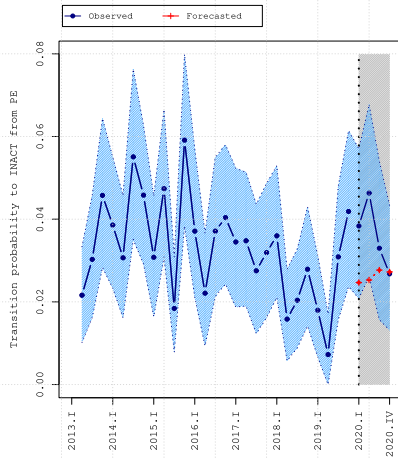
*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The grey area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Age 25-29.**

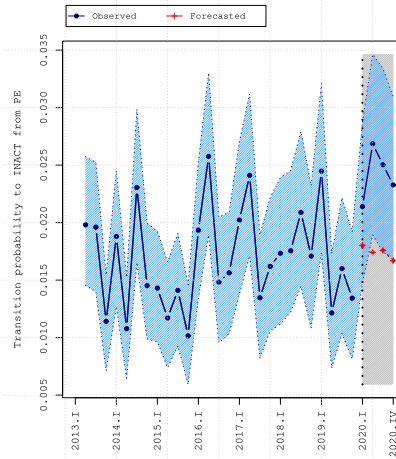
(a) South.



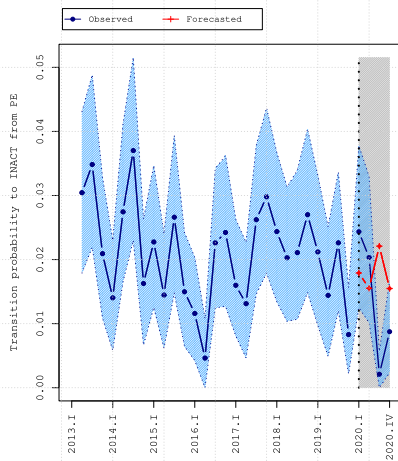
(b) North.

**Age 30-39.**

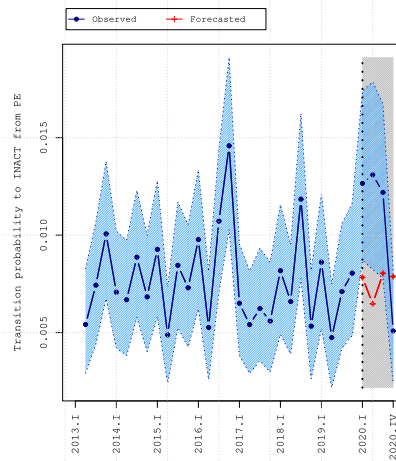
(c) South.



(d) North.

**Age 40-49.**

(e) South.



(f) North.

**Fig. 3.** Transition probabilities of females from permanent employment to the inactive state by age groups.

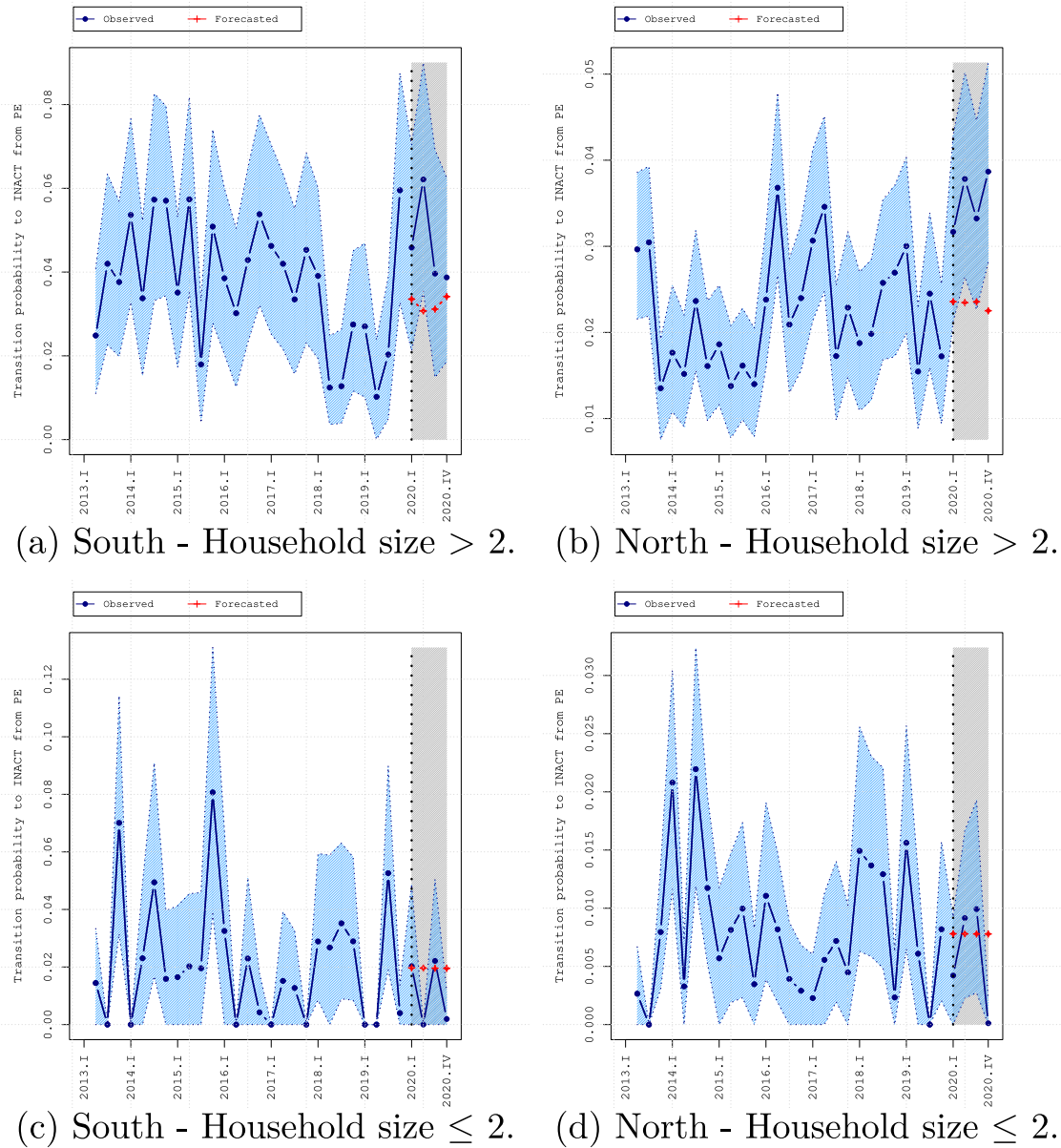
*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The grey area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Table 3**

Percentage of females with at least one child below the age of 11 by geographical area and household size.

Females with at least one child below the age of 11	Age 30–39		Age 40–49	
	North	South	North	South
> 2 components	81.2	71.5	55.2	44.0
≤ 2 components	6.6	9.3	6.0	4.8

Note: North includes regions in the North and the Center. Source: ELFS data.



**Fig. 4.** Transition probabilities of females aged 30–39 from permanent employment to the inactive state in the North and South of Italy by household size.

Note: Confidence intervals at 90% are computed using 1000 bootstraps. The grey area identifies the COVID period. North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

permanent employment to the inactive state show an even clearer geographical pattern (Fig. 4). In a household with more than two individuals the transition probabilities from permanent employment to the inactive state have significantly and persistently increased for females in the 30–39 age cohort living in the North. On the contrary, no statistically significant effect is present for females living in households with less than two components neither in the North or the South, neither from

permanent nor from temporary employment. No effect is observed also among females living in the South in a household with more than two components. The same patterns are found when looking at the transitions from temporary employment (Fig. 14 in Appendix E).

Females with young children living in the North of Italy have therefore been charged with the highest toll. In light of the pre-pandemic evidence of weaker attachment of females to the labour market com-



**Table 4**

Odds-ratios of being active next quarter for an individual currently active in the labour market (females age 30–39).

Females age 30–39	C.I. 2.5%	C.I. 5%	Mean bootstrap	C.I. 95%	C.I. 97.5%
COVID × North × Household members > 2	0.445	0.470	<b>0.690</b>	0.964	1.035
Industry	2.379	2.450	<b>2.984</b>	3.542	3.676
Constructions	1.915	2.015	<b>2.886</b>	3.991	4.294
Commerce	2.667	2.753	<b>3.303</b>	3.923	4.036
Hotels and restaurants	1.130	1.170	<b>1.400</b>	1.672	1.701
Transport	2.382	2.486	<b>3.377</b>	4.555	4.792
Communications	2.210	2.319	<b>3.226</b>	4.394	4.700
Finance	3.385	3.619	<b>4.917</b>	6.608	7.105
Real estate	2.450	2.539	<b>3.053</b>	3.631	3.749
Public administration	3.276	3.492	<b>5.111</b>	7.299	7.907
Education and health	1.709	1.760	<b>2.077</b>	2.457	2.537
Other sectors	1.574	1.624	<b>1.958</b>	2.320	2.388
Primary education	0.551	0.564	<b>0.629</b>	0.694	0.705
Secondary education	0.772	0.785	<b>0.862</b>	0.943	0.959
North	1.553	1.595	<b>1.836</b>	2.094	2.139
Household members > 2	0.592	0.610	<b>0.705</b>	0.804	0.819
North × Household members > 2	0.833	0.856	1.009	1.181	1.222
COVID	0.475	0.509	0.886	1.436	1.574
COVID × Industry	0.358	0.393	0.674	1.014	1.098
COVID × Constructions	0.175	0.204	0.548	1.194	1.412
COVID × Commerce	0.295	0.344	<b>0.572</b>	0.861	0.936
COVID × Hotels and restaurants	0.218	0.247	<b>0.411</b>	0.619	0.665
COVID × Transport	0.161	0.179	<b>0.362</b>	0.624	0.700
COVID × Communications	0.307	0.358	0.800	1.488	1.745
COVID × Finance	0.381	0.442	1.076	2.068	2.614
COVID × Real estate	0.514	0.560	0.974	1.458	1.565
COVID × Public administration	0.594	0.668	2.422	5.852	6.747
COVID × Education and health	0.372	0.413	0.678	1.010	1.091
COVID × Others	0.425	0.458	0.777	1.168	1.265
COVID × Primary education	0.853	0.891	1.162	1.461	1.543
COVID × Secondary education	0.700	0.725	0.878	1.045	1.073
COVID × North	0.688	0.730	1.014	1.356	1.420
COVID × Household members > 2	0.939	0.993	1.379	1.811	1.912
Observations			57264		

Note: year and quarter fixed effects and country of origin of the individual are included. North includes regions in the North and the Center. *Source*: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

pared to males, and of high female state dependency in the inactivity state (Duhautois et al., 2018), an additional worry is the persistence of the increased outflow toward inactivity until the end of 2020.

As explained by Honoré and Kyriazidou (2000), this higher persistence in the inactive state might be due two different factors. First, it may be ascribable to lagged decisions (*true state dependency*); for instance, the choice of women to remain in the inactive state is linked to their fertility choice, i.e., the choice to leave the labour market to have children and remain inactive to take care of them. Second, it could be due to a reaction to the shock, i.e., individual preferences have changed as a consequence of the pandemic (*spurious state dependency*). For instance, a woman might have decided to remain inactive due to the worsening of the labour market conditions. Distinguishing between these two types of state dependency is extremely important for policy reasons. However, the identification would require long longitudinal data on individual histories and information on individual preferences, which unfortunately are not available. In the next section, we move a first step toward disentangling the two explanations.

#### 4.2. The determinants of labour force participation

The non-parametric analysis based on transition probabilities cannot easily handle the strong heterogeneity between the North and South of Italy along several dimensions. This is even more severe in our case due to the (relatively small) sample size. To circumvent this issue, we use a parametric approach based on a *logit* model, which allows to control for several individual and job characteristics, such as gender, age, sector, education, household size, etc.

We use the sample of females in the 30–39 age cohort and repeat the same estimation on other subsamples including different age groups and gender. The estimation of a logit model using design-based longitudinal weights may create severe numerical issues (Train, 2009). Hence, we run 1000 bootstraps using the longitudinal sample weights to estimate the model's coefficients and their 90% and 95% confidence intervals.

Table 4 displays the estimated odds-ratios of the probability to remain active on the labour market, conditional on being active the quarter before, given a set of explanatory variables for the subsample of females in the 30–39 age cohort.<sup>9</sup> The reference category includes all individuals with a tertiary level of education living in the South in a household with less than two people working in the agriculture sector.<sup>10</sup>

Independently on the pandemic, the probability to remain active is on average higher for workers in all sectors, compared to agriculture, which is our baseline. However, the coefficients vary widely across sectors, ranging from 1.4 for hotels and restaurant, to 5.1 for public administration. Not surprisingly, primary and secondary educated individuals show a lower likelihood to persist in the active state, compared to tertiary educated individuals. The geographical location is important: liv-

<sup>9</sup> The odds-ratio represents the ratio between the probability that the event will occur with respect to the probability the event will not occur, conditioned to a given explanatory variable; hence, an odds-ratio greater than one implies an increased occurrence of the event, while an odds-ratio lower than one implies a decreased occurrence of the event with respect to a given explanatory variable.

<sup>10</sup> The full regression with all the variables included is reported in Table 15 in Appendix H.

**Table 5**

Odds-ratios of being **inactive** next quarter for an individual currently inactive in the labour market.

	C.I. 2.5%	C.I. 5%	Mean bootstrap	C.I. 95%	C.I. 97.5%
<b>Females 30–39</b>					
COVID × EU citizen	0.647	0.669	0.840	1.045	1.091
COVID × No EU citizen	0.949	0.981	1.189	1.425	1.469
COVID × Primary education	0.833	0.858	1.021	1.195	1.226
COVID × Secondary education	0.767	0.789	0.914	1.055	1.089
COVID × North	0.833	0.866	1.111	1.406	1.470
COVID × Household members > 2	0.854	0.892	1.098	1.331	1.366
Observations			44,428		
<b>Males 30–39</b>					
COVID × EU citizen	0.911	0.971	1.526	2.191	2.343
COVID × No EU citizen	0.671	0.705	0.917	1.161	1.215
COVID × Primary education	0.502	0.527	<b>0.677</b>	0.842	0.883
COVID × Secondary education	0.510	0.532	<b>0.679</b>	0.848	0.887
COVID × North	0.664	0.696	0.917	1.177	1.239
COVID × Household members > 2	0.967	1.021	1.278	1.568	1.641
Observations			20,358		

Note: year and quarter fixed effects and individual characteristics are included.

North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

ing in the North increases the likelihood to remain active, compared to living in the South. [Appendix H](#) shows that the same applies for 30–39 years old males and for both females and males in the 40–49 age group. These results point to a higher efficiency of the labour market in the North, likely due to its structural and institutional settings.

Finally, living in a household with more than two people significantly decreases the probability to remain active on the labour market. As regards the effect of the pandemic, we do not find asymmetric effects by education and household size. The shock appears to be symmetric even across the North and the South, i.e., COVID did not change the differential geographical efficiency of the labour market (the same applies for males and for both females and males in the age group 40–49, see [Appendix H](#)). The observed differential geographical changes in the labour force participation cannot be therefore attributed to changes in structural and institutional settings.

The only factor that plays a role is the sector of work: the odds-ratio is significantly below one in sectors such as hotel and restaurants, commerce and transportation, while it is not statistically significant across all other sectors.

The estimate of a lower-than-one coefficient for the interaction among the COVID period dummy, the North dummy, and the household-size-bigger-than-2 dummy suggests a significant reduction in the probability to be active on the labour market for females in the 30–39 age cohort, living in the North of Italy and in a household with more than two people. On the contrary, among older women we do not observe any significant change ([Tables 19 and 20 in Appendix H](#)). Among males in the 30–39 age category, the same coefficient is marginally significant, suggesting that they have been struggling too during the pandemic ([Table 17 in Appendix H](#)). Among females in the 30–39 age cohort, the probability to persist in inactivity is not affected by the pandemic. On the contrary, for males in the 30–39 age cohort with primary and secondary education, the estimates point to a return to the labour force over the 2020 ([Table 5](#)).<sup>11</sup>

To summarize, although males in the 30–39 age cohort were also hurt by the pandemic in a similar manner as females, they went back to the labour market towards the end of 2020, while females of the same age cohort did not.

## 5. Discussion and concluding remarks

On top of an increased number of workers who exited the labour force across gender, age groups and geographical location at the outburst of the pandemic, there exists a substantial outflow of females in the North of Italy in their 30s with small children leaving employment, either permanent or temporary, and becoming inactive (at least until the end of 2020). To appreciate the severity of the phenomenon, they correspond to approximately 40,000 women in the 30–39 age cohort moving from employment to inactivity in a quarter. But, surprisingly, the same significant outflows of women are not present in the South.

The reasons behind this asymmetric pattern could be several and are hard to be precisely pinned down, due to the lack of appropriate data at individual level. One possible explanation is that females in the North were less afraid to pause their career knowing that the labour market is more efficient, and they will have the chance to re-enter later, compared to women in the South. Testing this hypothesis, which carries relevant policy implications, would require more recent data, currently not available.

Instead, inspired by the socio-cultural literature, we argue that part of the explanation lays in the presence of heterogeneous cultural factors, in particular related to the attitude towards work, across Italian regions ([Fernández, 2011; McGinn et al., 2019; Stevens and Boyd, 1980](#)), and in the self-selection into the labour market of females in the South.

[Table 6](#) reports the answer to specific questions which could pin down the different attitude towards work in the North and South of Italy of individuals between the age of 25 and 39 included in the most recent wave of the European Value Survey of 2017. In particular, the employment status of the father when the individual was 14 years old does not play any role in the labour force participation decision of males and females, neither in the North nor in the South (Question (1) in [Table 6](#)).<sup>12</sup> On the contrary, individuals with a non-working mother are more likely to be inactive (Question (2) in [Table 6](#)), which is further evidence of the strong relationship between maternal labour market participation and adult daughters' activity in the labour market ([Stevens and Boyd, 1980](#)). Not surprisingly, the percentage of females (and males) with a working mother is higher in the North, due to the historically higher female labour force participation.

<sup>12</sup> The statistics for males non active both in the North and in the South are not to be considered as based on too few observations.

<sup>11</sup> The full estimates are reported in [Tables 16 and 18 in Appendix H](#).

**Table 6**

Parents' employment and individual beliefs of Italian individuals aged 25–39 by gender, geographical location and labour market participation.

	Active males		Non-active males		Active females		Non-active females	
	North	South	North	South	North	South	North	South
Percentage of individuals aged 25–39 who responded positively.								
(1) At age 14, father employed	98.33 (1.22)	95.06 (2.49)	87.50 (12.24)	100.00 (0)	<b>98.26</b> (1.22)	<b>98.18</b> (1.84)	<b>100.00</b> (0)	<b>89.13</b> (4.62)
Observations	120	81	8	5	115	55	22	46
(2) At age 14, mother employed	59.68 (4.43)	32.50 (5.23)	88.89 (11.02)	16.67 (16.16)	<b>65.49</b> (4.57)	<b>38.71</b> (6.31)	<b>55.00</b> (11.03)	<b>27.67</b> (6.64)
Observations	124	80	9	6	113	62	20	47
Percentage of individuals aged 25–39 who responded they agree with the statement.								
(3) Job needed to develop talent	76.34 (3.62)	88.37 (3.47)	25.00 (13.01)	85.71 (14.20)	<b>75.41</b> (3.88)	<b>89.06</b> (3.84)	58.33 (9.82)	79.59 (5.94)
(4) Lazy if not working	66.41 (4.20)	68.60 (5.07)	33.33 (13.95)	57.14 (19.84)	<b>63.11</b> (4.31)	<b>71.88</b> (5.84)	54.17 (10.37)	51.02 (7.17)
(5) Child suffers with working mother	<b>25.19</b> (3.79)	<b>48.83</b> (5.59)	16.67 (10.68)	0 (0)	<b>30.33</b> (4.30)	<b>32.81</b> (5.91)	<b>29.17</b> (9.55)	<b>55.10</b> (7.11)
Observations	131	86	12	7	122	64	24	49

*Note:* The specific questions asked are: (1) “When you were 14, was your mother employed, self-employed or not?” (2) “When you were 14, was your father employed, self-employed or not?” The following questions are: “Do you agree or disagree with the following statements?” (3) “To fully develop your talents, you need to have a job” (4) “People who don’t work turn lazy” (5) “When a mother works for pay, the children suffer”. Standard errors are computed using bootstrap (1000 draws). North includes regions in the North and the Center. *Source:* European Value Survey, 2017.

As regards to the different attitude towards work, a larger percentage of individuals in the South considers work important to develop individual talents, compared to the North (Question (3) in Table 6). Specifically, the large difference between active females in North and in the South suggests a stronger attachment of the latter to the labour market (89% versus 75%). Moreover, among active females, not working represents a stigma much more in the South, compared to the North (72% versus 63%), suggesting larger costs for women in the South to leave the labour market. On the contrary, there is no difference among non-active females in the North and South. Finally, while 55% of non-active females in the South (and 49% of active males in the South), are of the opinion that children suffer when the mother works, only 30% of active females share this belief (Question (5) in Table 6).

In conclusion, the intersection of socio-cultural and economic factors in the North created an environment more favourable to reconcile career and family. On the contrary, active females aged 30–39 in the South were proportionally fewer but much more motivated. Thus, when the COVID-19 pandemic hit, the latter appeared to be more resilient, while the former more vulnerable. In addition to this short-term cost, as the future female labour force participation appears to be strongly dependent on the current female labour force participation, the COVID-19 pandemic could impose a further long-term toll caused by a persistent female labour force outflow.

#### Data availability

Data are available at author's website

#### Appendix A. COVID-19 in Italy

The first cases of COVID-19 in Italy were registered on January 31, 2020, but the virus began to spread exponentially in the second half of February. At the beginning, the virus circulated predominantly in Northern regions but by the beginning of March, it had reached all regions. The first measures limiting the mobility were implemented on February 23, and applied to a restricted number of municipalities in the Lombardy region; soon after, on March 10, the whole country went into a full lockdown. On March 11, the government prohibited nearly

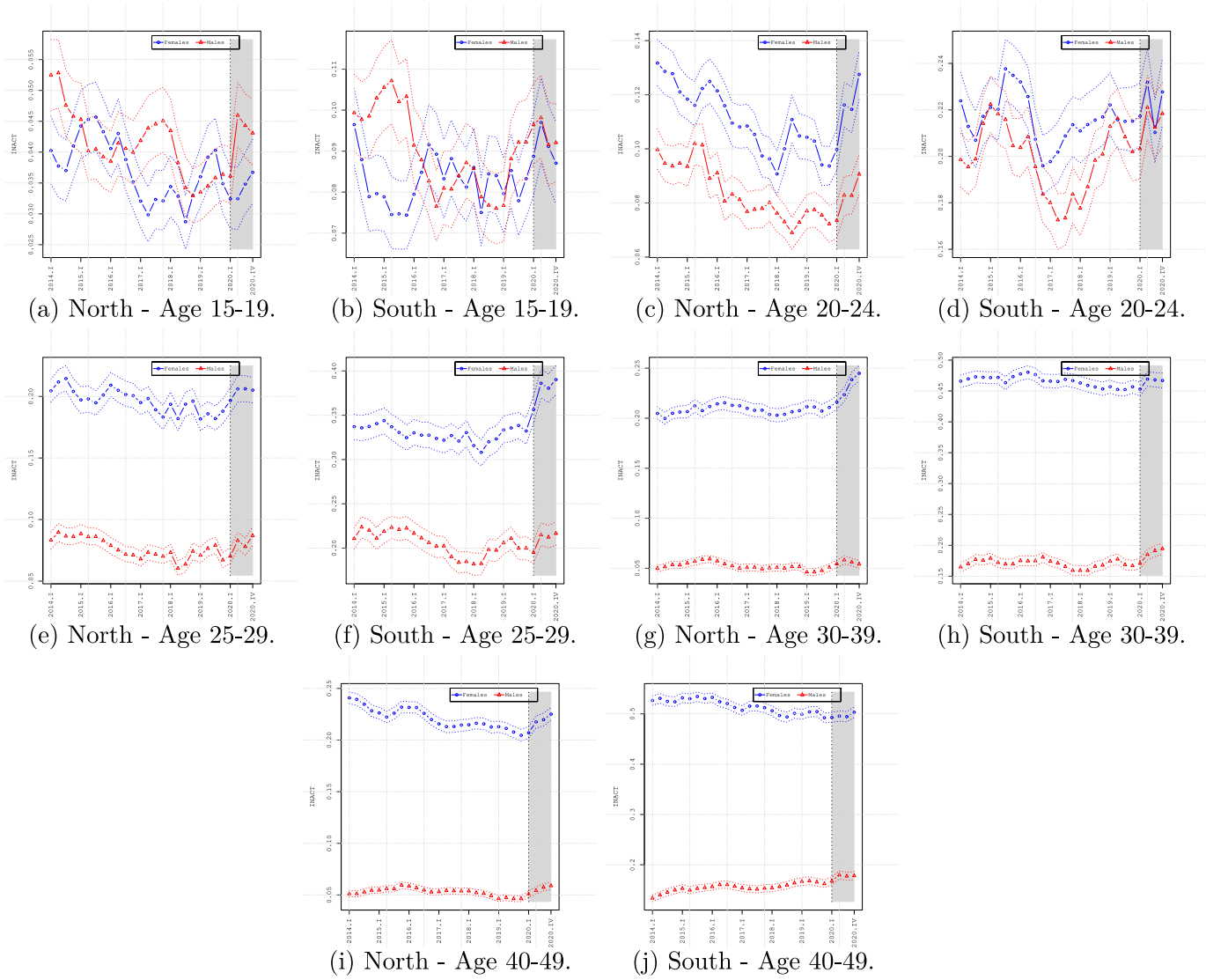
all commercial activity except for supermarkets and pharmacies and, on March 21, it restricted the movement of people and closed all non-essential businesses and industries. Sectors identified as essential, which could continue operating, include mainly agriculture, some manufacturing, energy and water supply, transports and logistics, ICT, banking and insurance, professional and scientific activities, public administration, education, health care and some service activities. Non-essential sectors which were completely shut include most manufacturing, wholesale and retail trade, hotels, restaurants and bars, entertainment and sport activities (Casarico and Lattanzio (2020)). The first national lockdown was relaxed on May 3, and, finally, ended on June 14. On October 5, new restrictions were imposed at national level, which were further strengthened on November 6, but allowing for regional differences based on the local pandemic spreading. However, almost all regions were locked in a strict regime until the end of December 2020.

On March 17, the Italian government introduced two new labour market policies to protect workers: (i) a COVID-19 furlough scheme and (ii) a ban on layoffs. The former was implemented for an initial duration of 9 weeks, and it applied retroactively starting from February 23. It represents an extension of the regular furlough scheme to all firms, independently on size. This measure aimed at preserving employment and allowed firms to cut labour costs during the lockdown period, by reducing hours of work thanks to a wage subsidy granted by the government. Firms using the COVID-19 furlough scheme could renew temporary contracts, waiving to the norms of the standard regulation. Upon completion of the furlough period, firms were allowed to dismiss employees for redundancy. The ban on layoffs prevented firm to fire workers for 60 days, starting from March 17; this ban could be applied retroactively to pending, but already validated, layoffs from February 23. Two later decrees extended the validity of these measures, which were in place until the end of 2021.

#### Appendix B. Labour market dynamics pre-COVID-19

##### B1. Shares of individuals by age, gender and geographical location

Figs. 5–8.

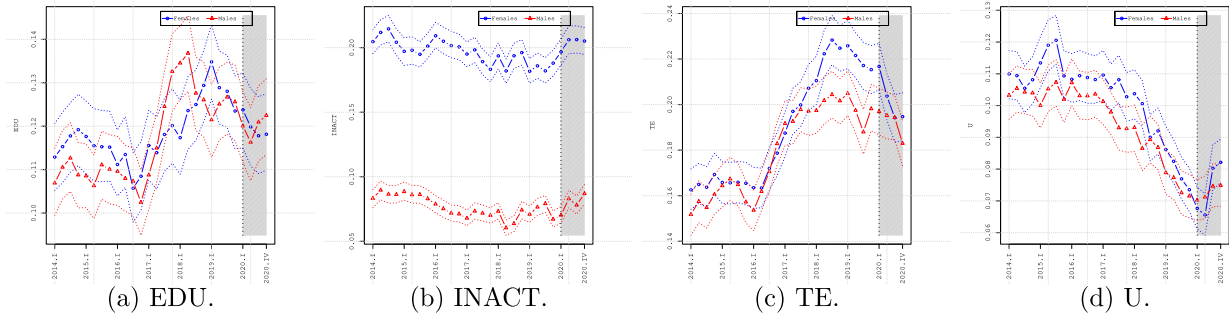


**Fig. 5.** Shares of inactive individuals (INACT) in the North and South of Italy.

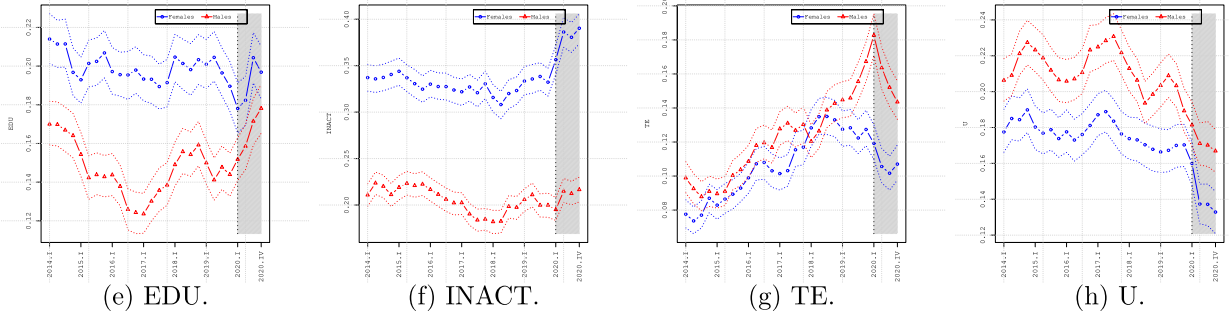
*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).



## North.



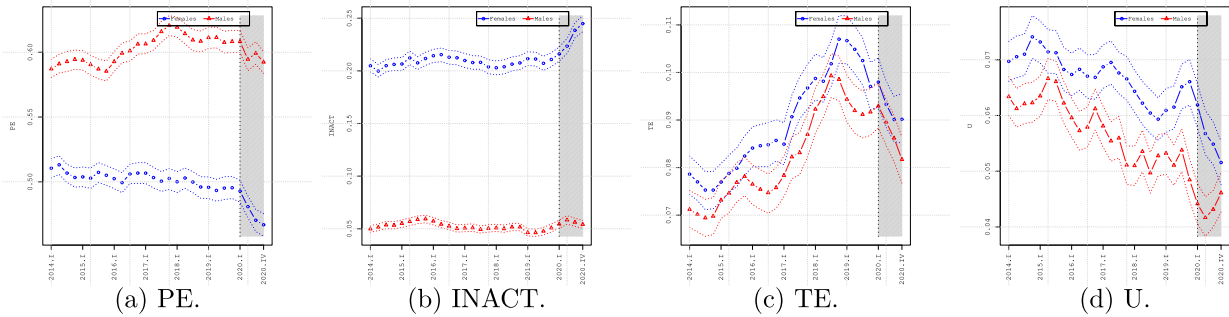
## South.



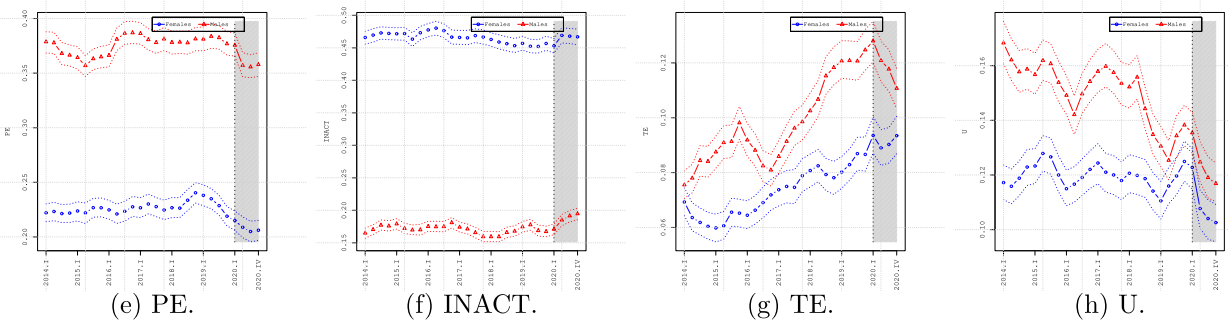
**Fig. 6.** Shares of individuals aged 25–29 in the temporary employment, unemployment, inactive, and education states in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## North.



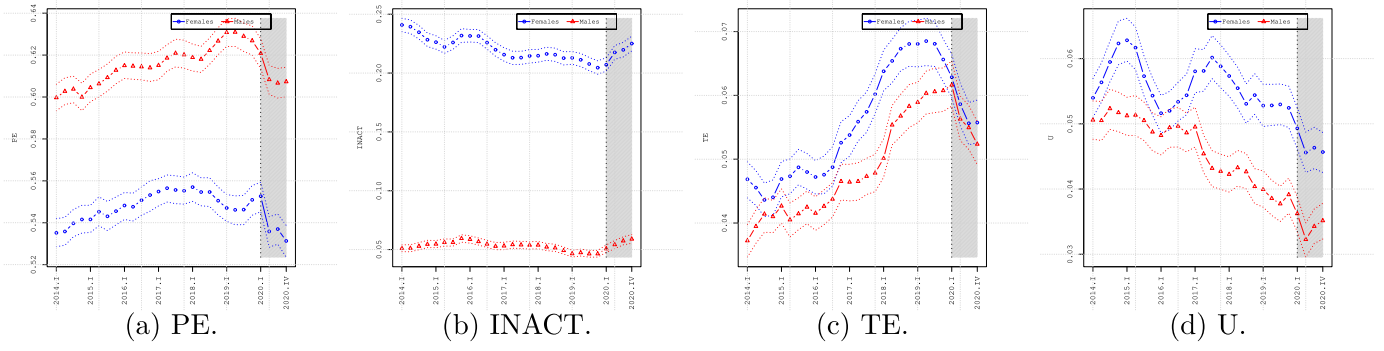
## South.



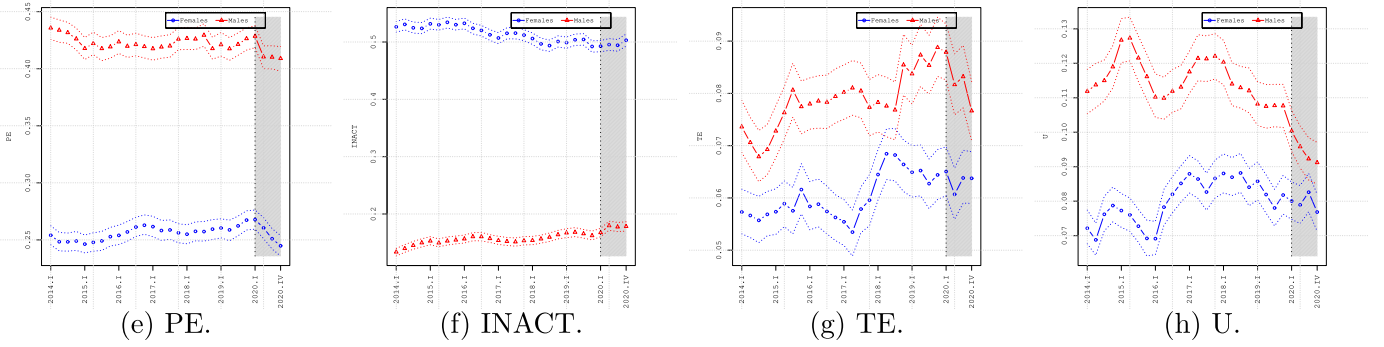
**Fig. 7.** Shares of individuals aged 30–39 in the temporary employment, permanent employment, inactive, and unemployment states in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## North.



## South.

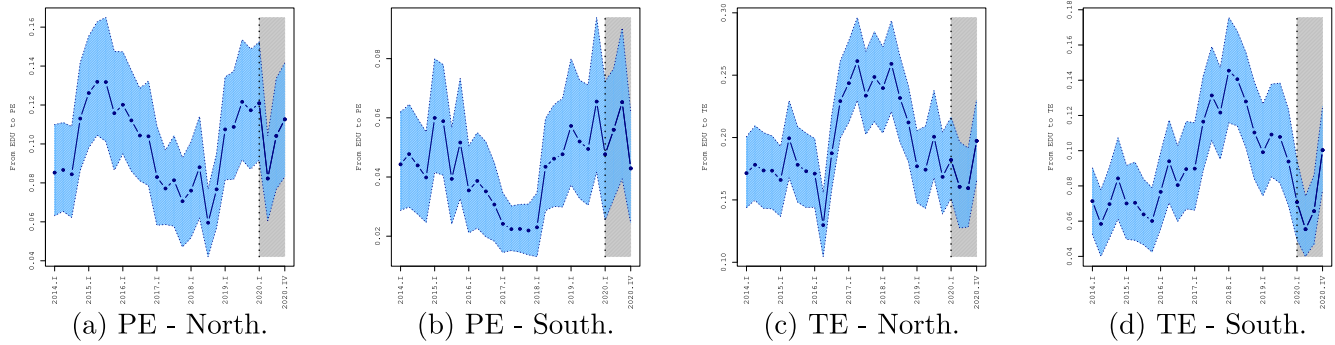


**Fig. 8.** Shares of individuals aged 40–49 in the temporary employment, permanent employment, inactive, and unemployment states in the North and South of Italy. *Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

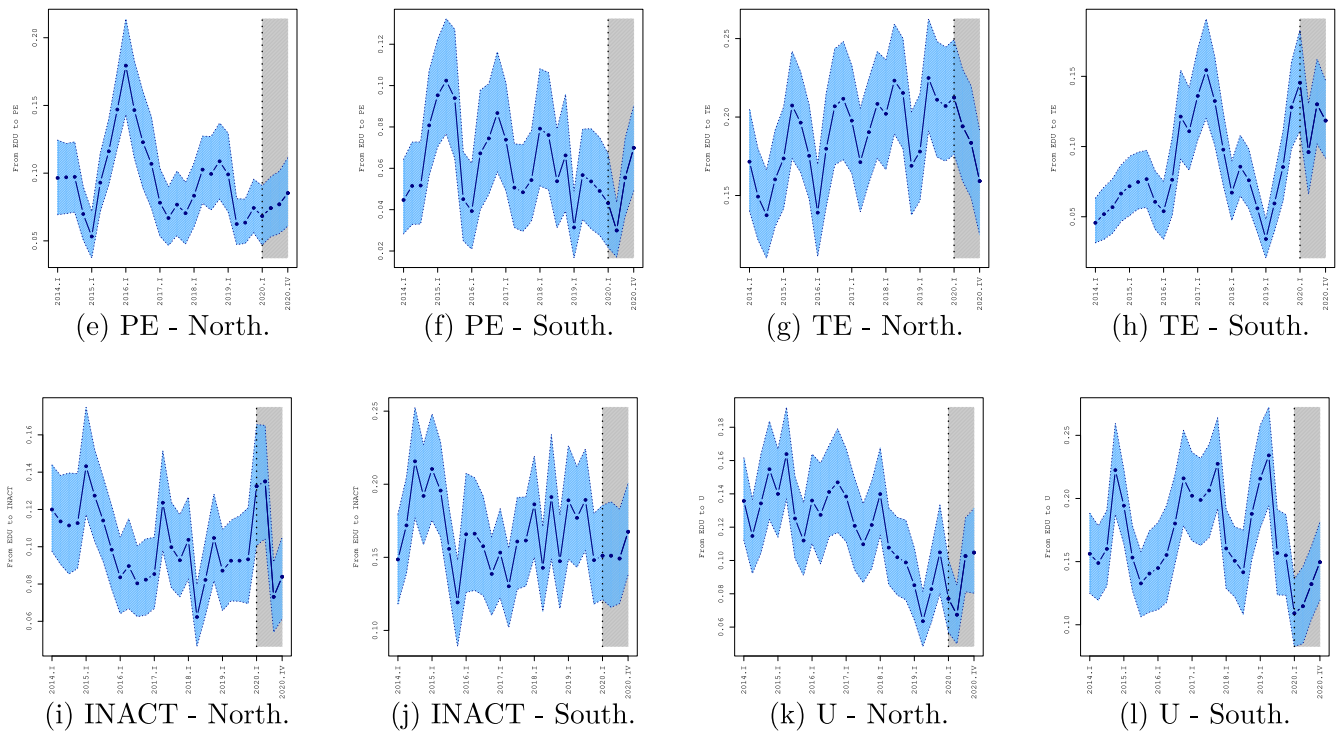
## B2. Transition probabilities by age, gender and geographical location

Figs. 9–12

## Females.



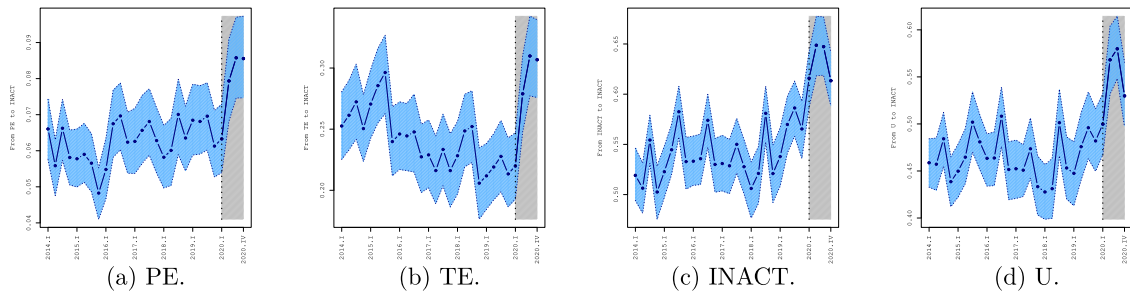
## Males.



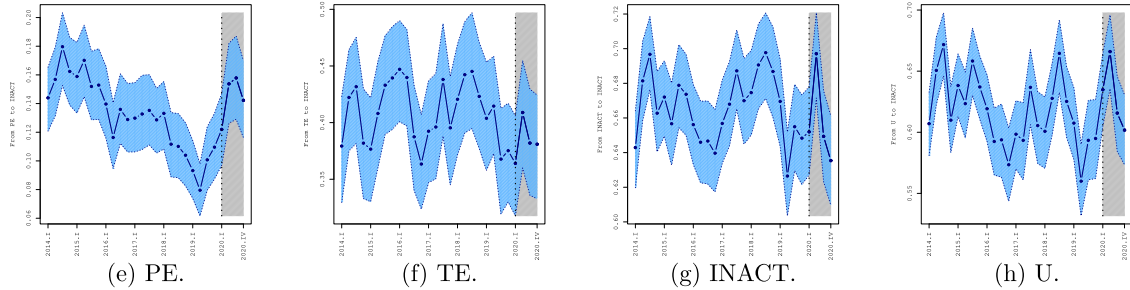
**Fig. 9.** Annual transition probabilities of individuals aged 25–29 from education to temporary employment, unemployment, inactive states in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## North.



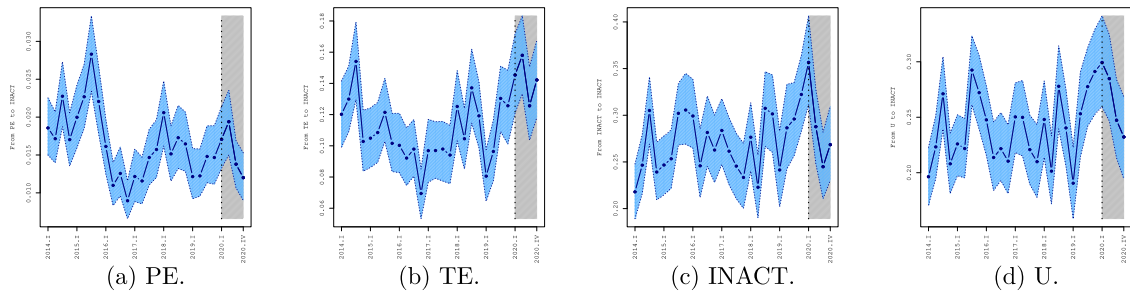
## South.



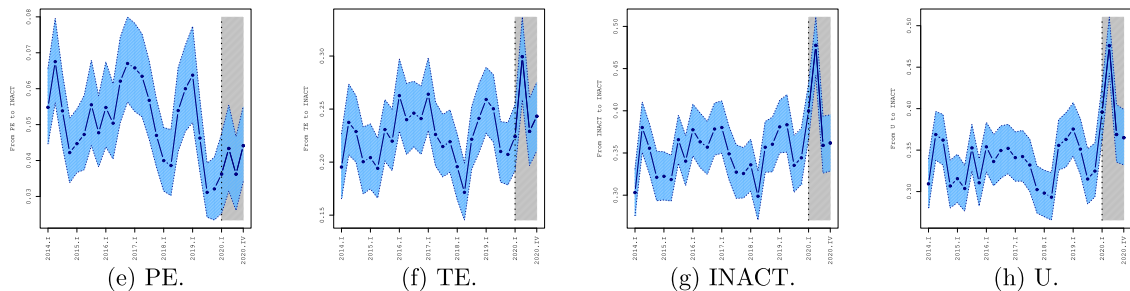
**Fig. 10.** Annual transition probabilities of females aged 30–39 from temporary employment, unemployment, inactive, and permanent employment to the inactive state in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## North.



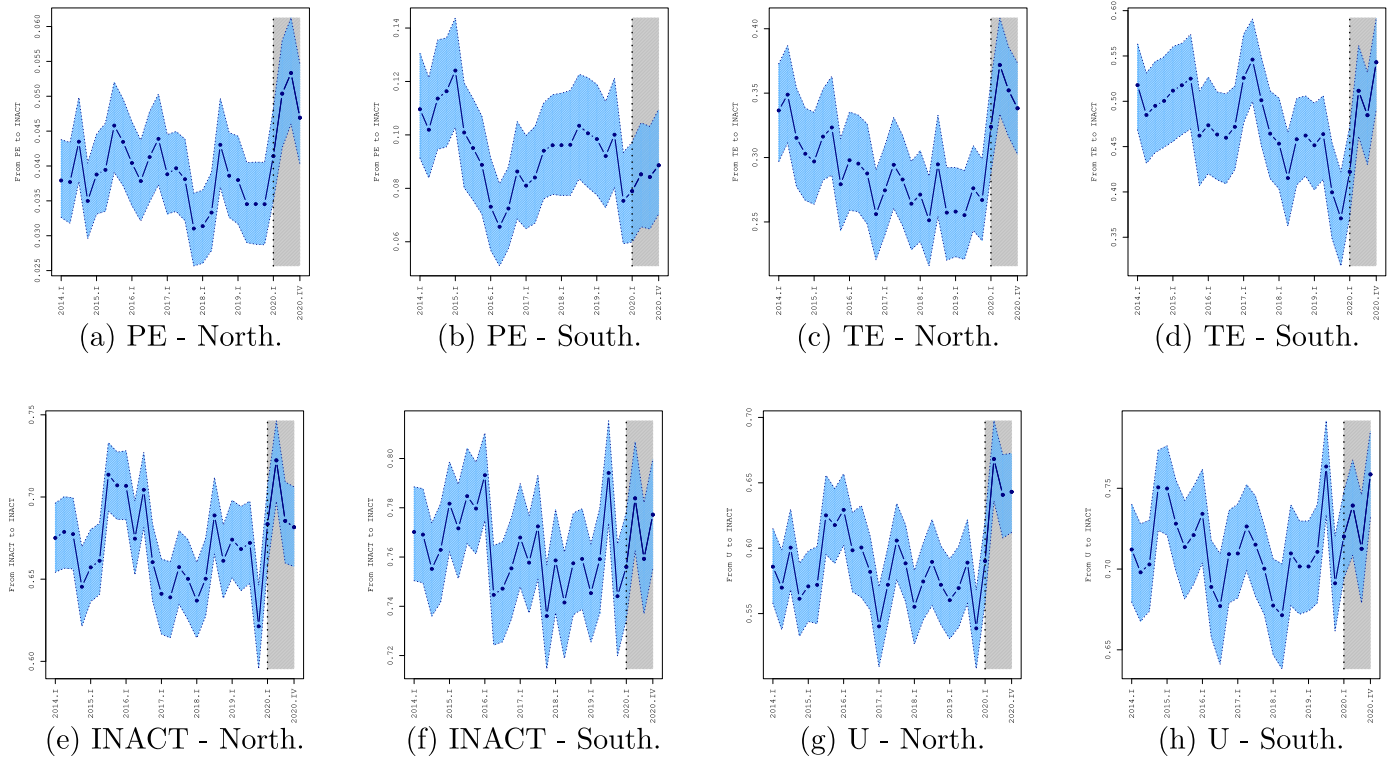
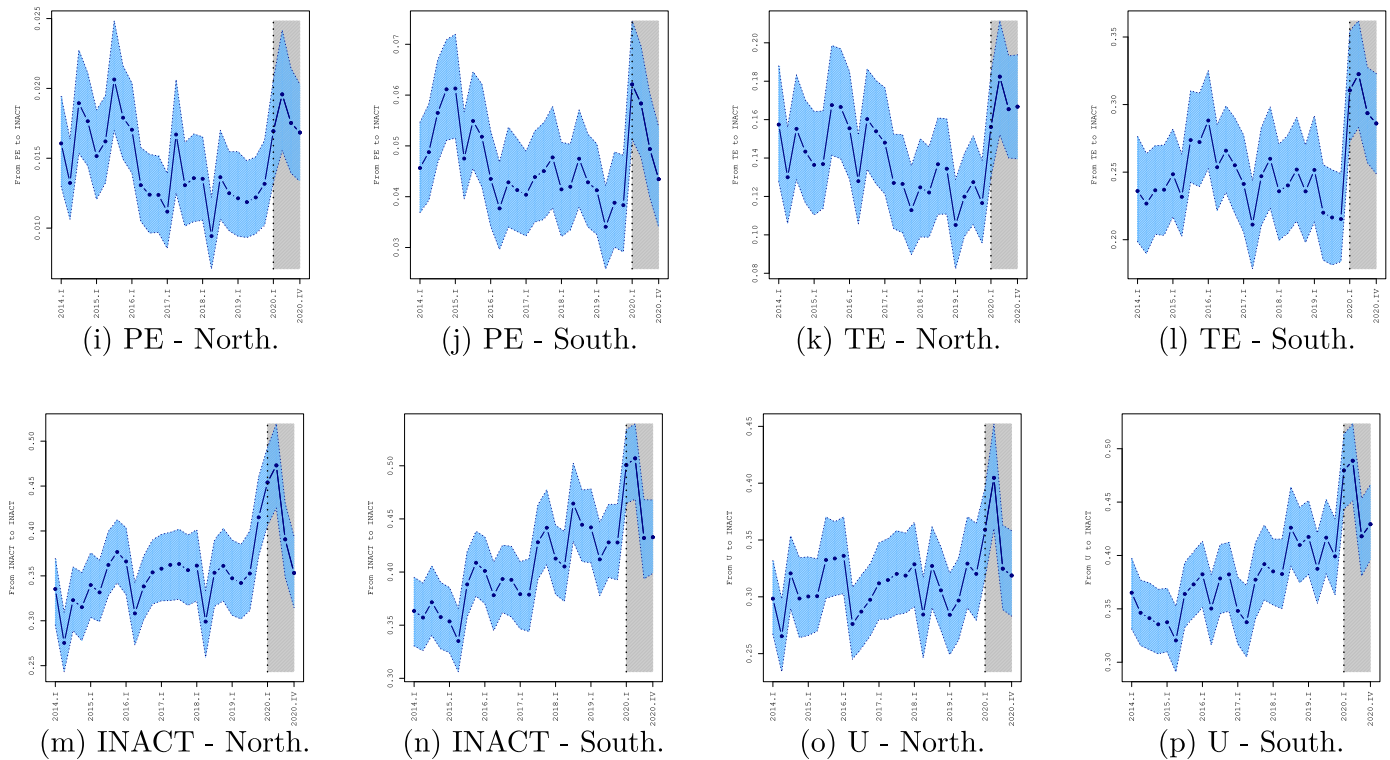
## South.



**Fig. 11.** Annual transition probabilities of males aged 30–39 from temporary employment, unemployment, inactive, and permanent employment to the inactive state in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).



**Females.****Males.**

**Fig. 12.** Annual transition probabilities of individuals aged 40–49 from temporary employment, unemployment, inactive, and permanent employment to the inactive state in the North and South of Italy.

*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

### Appendix C. The case of 25–29 female workers.

Although not the focus of this paper, we provide some discussion on the Covid effect for females in the 25–29 age category. Indicates that the share of 25–29 females in the inactive state has increased everywhere in Italy, but more in the South. We also observe from Figs. 9 and 13 that the transition probabilities for females in the 25–29 age category increased from unemployment and temporary employment to inactivity mainly in the South, and only marginally in the North. We do not observe any other significant increase in the transition probabilities from the other states to inactivity.

To dig further into this phenomenon, we look at the distribution of females in the 25–29 age category by employment status and household size, which we use as a proxy for the presence of children, across the two geographical areas. Table 7 shows that in the South the percentage of unemployed women living in a household with more than two members is much higher compared to the North. Similarly, in the South the percentage of women in temporary employment living in a household with more than two members is much higher compared to the North.

These findings provide further support to the main results of the paper which point to the presence of children as the main driver behind the decision of women to leave the labour force during the Covid pandemic.

**Table 7**

Distribution of female aged 25–29 workers by employment status (unemployment and temporary employment), household size and geographical location.

	Unemployed	
	South	North
HH ≤ 2	18.6	26.4
HH > 2	81.4	73.6
In temporary employment		
	South	North
HH ≤ 2	21.8	31.6
HH > 2	78.2	68.4

*Note:* North includes regions in the North and the Center.

*Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

### Appendix D. Regional distribution of median age of the mother at birth.

**Table 8**

Regional distribution of median age of the mother at first child by citizenship.

Region	Macro-area	Citizenship	
		Italian	Foreign
Piemonte	North	32.11	28.68
Valle d'Aosta	North	32.08	28.42
Lombardia	North	32.60	28.54
Prov. Auton. Bolzano	North	30.72	29.33
Prov. Auton. Trento	North	31.90	28.33
Veneto	North	32.27	28.21
Friuli Venezia Giulia	North	32.40	28.30
Liguria	North	32.71	28.38
Emilia Romagna	North	32.55	28.56
Toscana	Center	32.86	28.39
Umbria	Center	32.44	29.76
Marche	Center	32.51	29.15
Lazio	Center	32.96	29.92
Abruzzo	Center	32.33	28.74
Molise	South	31.61	-
Campania	South	30.59	28.73
Puglia	South	31.11	28.50
Basilicata	South	31.66	24.67
Calabria	South	31.02	28.90
Sicilia	South	30.59	28.56
Sardegna	South	32.60	30.03
Italy		31.92	28.73

Source: Italian Ministry of Health, 2019.

**Table 9**

Regional distribution of births by age of the mother.

Region	Macro-area	Age groups				# births
		<20	20–29	30–39	> 40	
Piemonte	North	0.74	28.16	60.76	10.33	27,296
Valle d'Aosta	North	0.49	27.53	60.99	10.99	810
Lombardia	North	0.73	26.56	62.18	10.52	72,702
P.A. Bolzano	North	0.73	32.64	58.93	7.70	5,218
P.A. Trento	North	0.47	27.82	62.01	9.64	4,004
Veneto	North	0.61	26.91	62.17	10.30	32,845
Friuli Venezia Giulia	North	0.63	27.99	60.35	11.00	7,892
Liguria	North	0.87	27.71	60.36	11.04	8,375
Emilia Romagna	North	0.58	27.97	60.69	10.63	31,123
Toscana	Center	0.64	25.72	61.78	11.81	23,626
Umbria	Center	0.70	26.58	62.25	10.47	6,016
Marche	Center	0.66	25.03	62.67	11.34	9,358
Lazio	Center	0.77	24.64	61.41	13.06	38,388
Abruzzo	Center	0.59	25.99	62.78	10.63	8,272
Molise	South	0.96	27.15	60.77	11.00	1,672
Campania	South	1.61	31.55	58.72	8.09	46,833
Puglia	South	1.53	28.86	60.12	9.48	27,539
Basilicata	South	0.42	26.65	61.82	11.09	3,824
Calabria	South	1.29	30.34	59.74	8.62	12,674
Sicilia	South	2.24	33.14	56.40	8.21	38,047
Sardegna	South	0.86	23.18	61.01	14.94	8,556
Total		1.01	28.04	60.62	10.29	415,070

Source: Italian Ministry of Health, 2019.

## Appendix E. Labour market dynamics during COVID-19

## E1. Shares of individuals by age, gender and geographical location

Tables 10 and 11

Table 10

Changes in the shares in different labour market states from quarter IV of 2019 to quarter IV of 2020 by category of individuals.

	SE	TE	PE	U	inactive	EDU	FS
<b>Females - North</b>							
20–24	−0.002 (0.305)	−0.041*** (0.000)	−0.011* (0.050)	0.013*** (0.009)	<b>0.034***</b> (0.000)	−0.001 (0.467)	0.008*** (0.000)
25–29	−0.0001 (0.485)	−0.021*** (0.005)	−0.027*** (0.002)	0.009* (0.077)	<b>0.017**</b> (0.022)	−0.005 (0.244)	0.027*** (0.000)
30–39	−0.009** (0.012)	−0.007* (0.052)	−0.029*** (0.000)	−0.015*** (0.000)	<b>0.034***</b> (0.000)	−0.001 (0.225)	0.027*** (0.000)
40–49	−0.009*** (0.008)	−0.010*** (0.000)	−0.020*** (0.000)	−0.007*** (0.001)	<b>0.020***</b> (0.000)	0.0004 (0.247)	0.024*** (0.000)
<b>Females - South</b>							
20–24	−0.014*** (0.000)	−0.024*** (0.000)	−0.018*** (0.001)	−0.019** (0.017)	0.013 (0.143)	<b>0.050***</b> (0.000)	0.013*** (0.000)
25–29	−0.006 (0.166)	−0.020*** (0.003)	−0.016** (0.041)	−0.037*** (0.000)	<b>0.058***</b> (0.000)	0.007 (0.254)	0.014*** (0.000)
30–39	0.001 (0.418)	0.007 (0.109)	−0.013** (0.042)	−0.022*** (0.000)	0.010 (0.154)	−0.001 (0.424)	0.017*** (0.000)
40–49	0.003 (0.304)	−0.001 (0.461)	−0.023*** (0.000)	−0.005 (0.148)	0.011 (0.116)	0.002* (0.086)	0.013*** (0.000)
<b>Males - North</b>							
20–24	0.002 (0.331)	−0.011 (0.131)	−0.011* (0.088)	0.005 (0.212)	<b>0.018***</b> (0.000)	−0.020** (0.041)	0.016*** (0.000)
25–29	−0.007 (0.197)	−0.015** (0.041)	−0.024*** (0.002)	0.003 (0.300)	<b>0.020***</b> (0.000)	−0.003 (0.330)	0.026*** (0.000)
30–39	−0.004 (0.222)	−0.010*** (0.002)	−0.016*** (0.006)	−0.002 (0.232)	0.003 (0.127)	0.002 (0.144)	0.027*** (0.000)
40–49	−0.006 (0.121)	−0.008*** (0.000)	−0.020*** (0.000)	−0.004** (0.047)	<b>0.013***</b> (0.000)	−0.0004 (0.146)	0.026*** (0.000)
<b>Males - South</b>							
20–24	−0.009** (0.038)	−0.020** (0.014)	0.008 (0.161)	−0.016** (0.042)	<b>0.016*</b> (0.079)	0.010 (0.229)	0.011*** (0.000)
25–29	0.002 (0.409)	−0.024*** (0.002)	−0.018 (0.046)	−0.022** (0.011)	<b>0.017*</b> (0.065)	<b>0.034***</b> (0.000)	0.012*** (0.000)
30–39	−0.004 (0.285)	−0.014*** (0.002)	−0.019** (0.017)	−0.021*** (0.000)	<b>0.027***</b> (0.000)	0.004 (0.110)	0.027*** (0.000)
40–49	0.005 (0.236)	−0.012*** (0.001)	−0.017** (0.018)	−0.016*** (0.000)	<b>0.016***</b> (0.003)	0.0005 (0.227)	0.025*** (0.000)

Note: The attained significance levels (ASL) of the null hypothesis of equality between the shares in the two periods computed using 1000 bootstraps are reported in parenthesis (Efron and Tibshirani, 1994, p.220); North includes regions in the North and the Center.

\*ASL<0.1; \*\*ASL<0.05; \*\*\*ASL<0.01.

**Table 11**

Changes in the shares of different categories of individuals in different labour market states from quarter III of 2019 to quarter III of 2020, by age groups.

	SE	TE	PE	U	inactive	EDU	FS
<b>Males - North</b>							
20–24	0.002 (0.284)	−0.011 (0.117)	−0.004 (0.307)	−0.008 (0.108)	<b>0.007*</b> (0.098)	−0.0001 (0.464)	0.013*** (0.000)
25–29	0.011 (0.060)	0.006 (0.219)	−0.033*** (0.000)	0.002 (0.390)	−0.001 (0.437)	−0.006 (0.215)	0.020*** (0.000)
30–39	−0.009 (0.047)	−0.005 (0.102)	−0.008 (0.122)	−0.011*** (0.000)	<b>0.008***</b> (0.000)	0.001 (0.176)	0.023*** (0.000)
40–49	−0.001 (0.428)	−0.006** (0.024)	−0.022*** (0.000)	−0.003* (0.074)	<b>0.011***</b> (0.000)	0.0002 (0.274)	0.021*** (0.000)
<b>Males - South</b>							
20–24	−0.003 (0.289)	−0.025*** (0.000)	0.012* (0.080)	−0.013 (0.102)	0.004 (0.351)	0.017 (0.114)	0.009*** (0.000)
25–29	0.005 (0.266)	−0.003 (0.385)	−0.016* (0.067)	−0.033*** (0.000)	0.013 (0.116)	<b>0.024***</b> (0.002)	0.012*** (0.000)
30–39	−0.007 (0.172)	−0.003 (0.315)	−0.027*** (0.001)	−0.015*** (0.002)	<b>0.023***</b> (0.000)	<b>0.006**</b> (0.010)	0.023*** (0.000)
40–49	−0.005 (0.214)	−0.002 (0.312)	−0.011* (0.095)	−0.015*** (0.000)	<b>0.012**</b> (0.031)	0.0002 (0.340)	0.022*** (0.000)
<b>Females - North</b>							
20–24	−0.004 (0.153)	−0.024*** (0.000)	−0.00000 (0.482)	−0.001 (0.417)	<b>0.021***</b> (0.000)	0.002 (0.443)	0.007*** (0.000)
25–29	−0.002 (0.355)	−0.023*** (0.001)	−0.017* (0.055)	0.003 (0.307)	<b>0.024***</b> (0.001)	−0.010* (0.093)	0.025*** (0.000)
30–39	−0.005 (0.131)	−0.012*** (0.000)	−0.025*** (0.000)	−0.010*** (0.000)	<b>0.031***</b> (0.000)	−0.001 (0.311)	0.022*** (0.000)
40–49	−0.005 (0.135)	−0.012*** (0.000)	−0.009* (0.064)	−0.007*** (0.001)	<b>0.012***</b> (0.000)	−0.0004 (0.215)	0.021*** (0.000)
<b>Female - South</b>							
20–24	−0.005 (0.159)	−0.024*** (0.000)	−0.009* (0.088)	−0.010 (0.157)	−0.005 (0.340)	<b>0.041***</b> (0.000)	0.011*** (0.000)
25–29	−0.012* (0.016)	−0.021*** (0.000)	0.004 (0.327)	−0.033*** (0.000)	<b>0.042**</b> (0.000)	0.008 (0.230)	0.011 (0.000)
30–39	0.002 (0.363)	0.003 (0.260)	−0.024*** (0.000)	−0.016*** (0.001)	<b>0.016**</b> (0.045)	0.003 (0.147)	0.016*** (0.000)
40–49	0.005 (0.176)	0.001 (0.400)	−0.011* (0.060)	0.005 (0.162)	−0.010 (0.125)	0.0004 (0.355)	0.011*** (0.000)

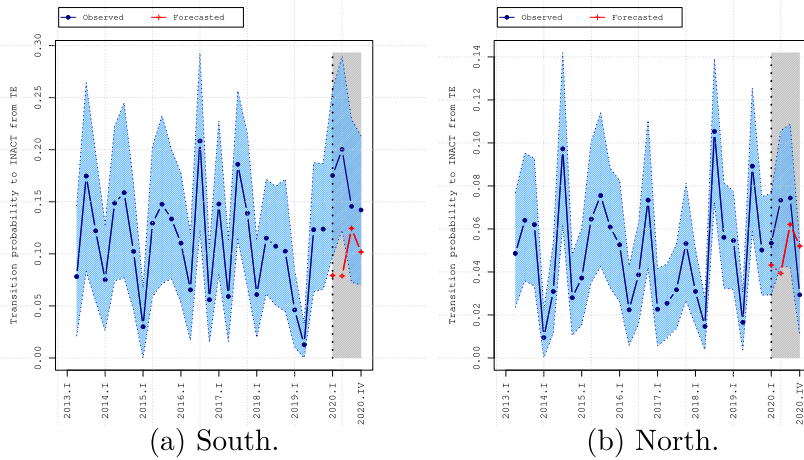
Note: The attained significance levels (ASL) of the null hypothesis of equality between the shares in the two periods computed using 1000 bootstraps are reported in parenthesis (Efron and Tibshirani, 1994, p.220); North includes regions in the North and the Center.

\*ASL<0.1; \*\*ASL<0.05; \*\*\*ASL<0.01.

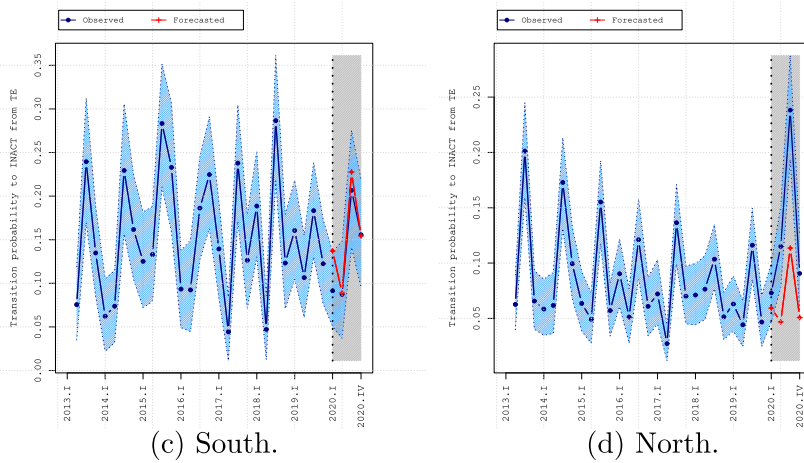


## E2. Transition probabilities of females by age and geographical location

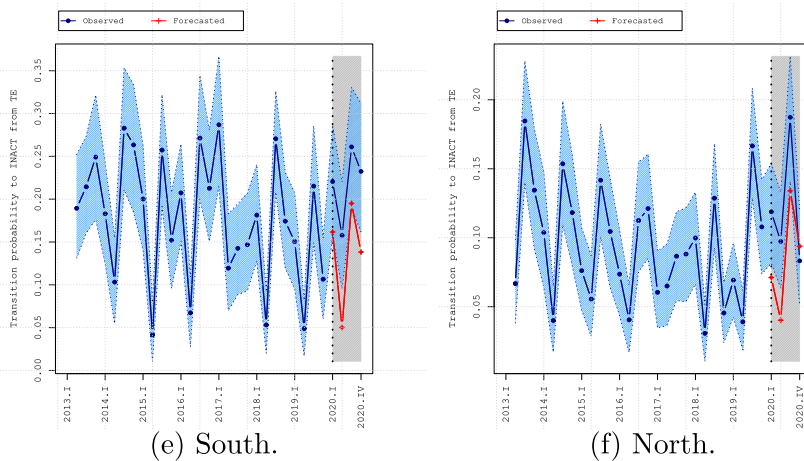
## Age 25-29.



## Age 30-39.

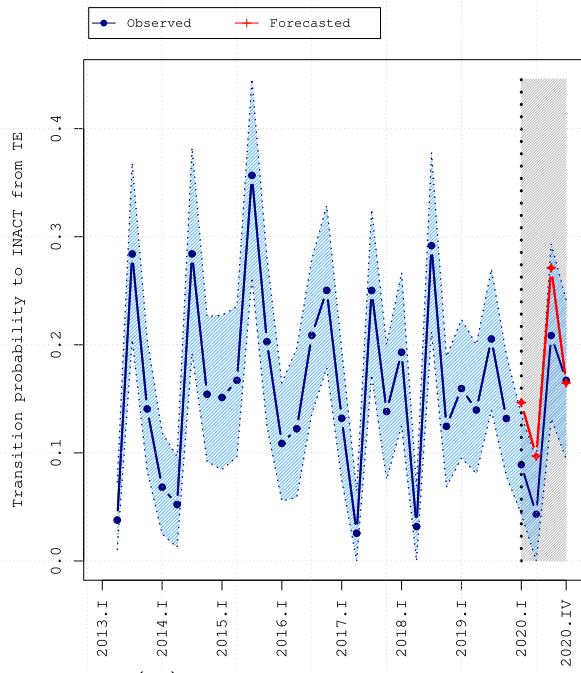
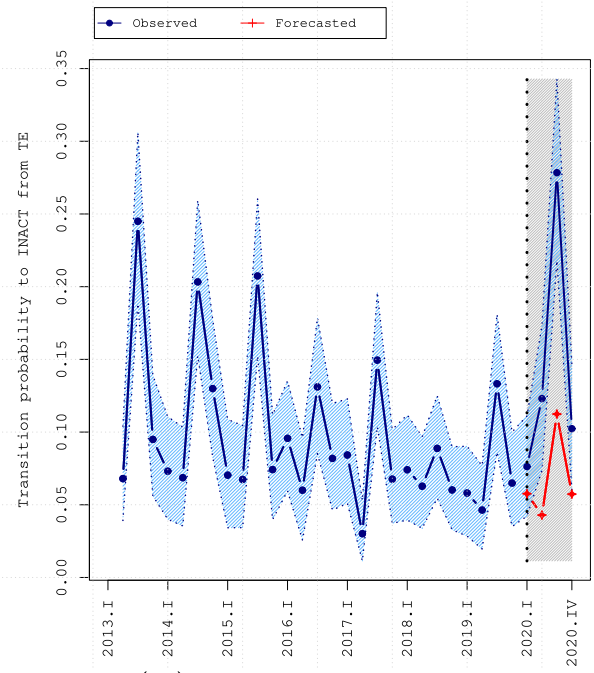
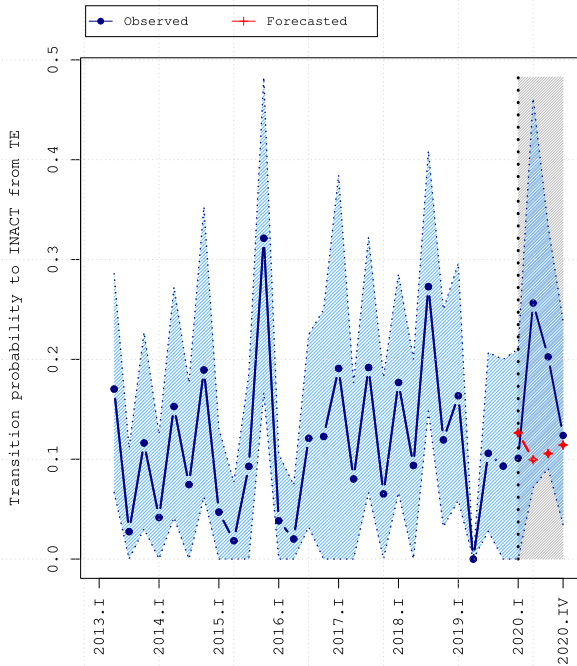
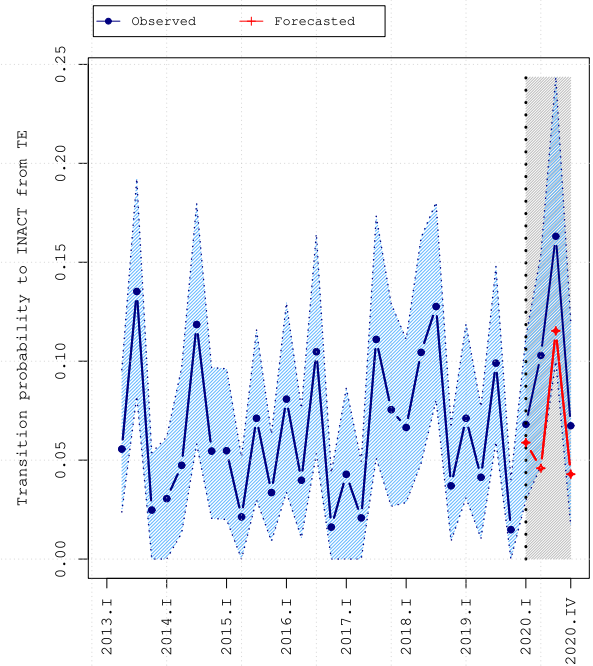


## Age 40-49.



**Fig. 13.** Transition probabilities of females from temporary employment to the inactive state by age groups.

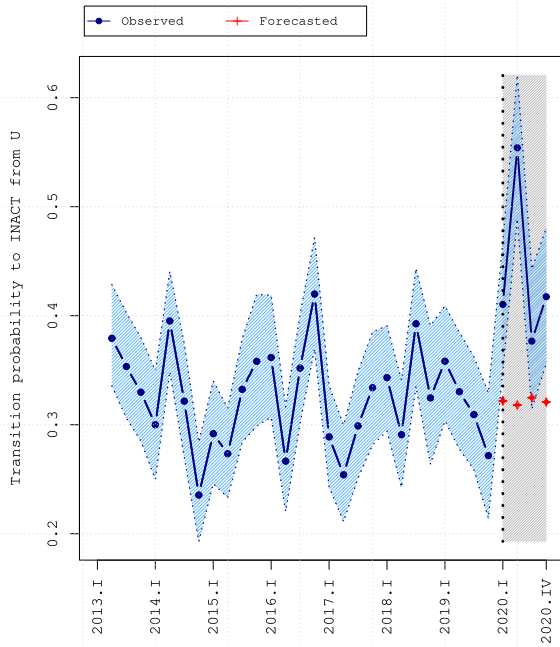
*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETA, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

(a) South -  $HH > 2$ .(b) North -  $HH > 2$ .(c) South -  $HH \leq 2$ .(d) North -  $HH \leq 2$ .**Fig. 14.** Transition probabilities of females aged 30–39 from temporary employment to the inactive in the North and South of Italy by household size.

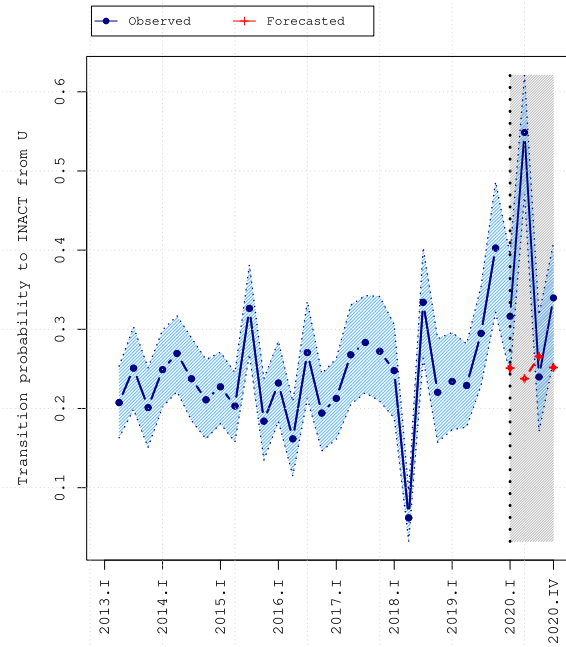
*Note:* Confidence intervals at 90% are computed using 1000 bootstraps. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## E3. Transition probabilities of males by age and geographical location

## Age 30-39.

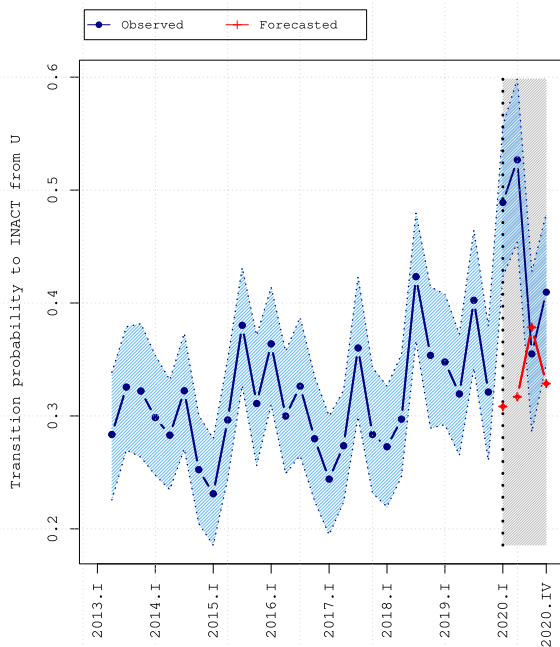


(a) South.

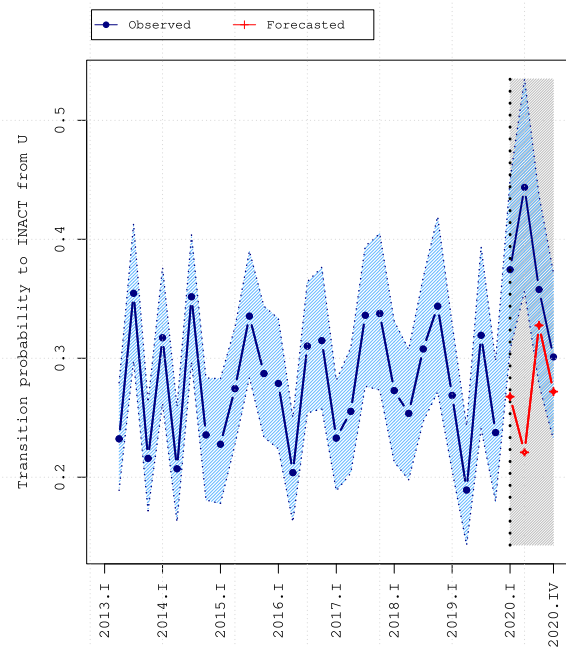


(b) North.

## Age 40-49.



(c) South.

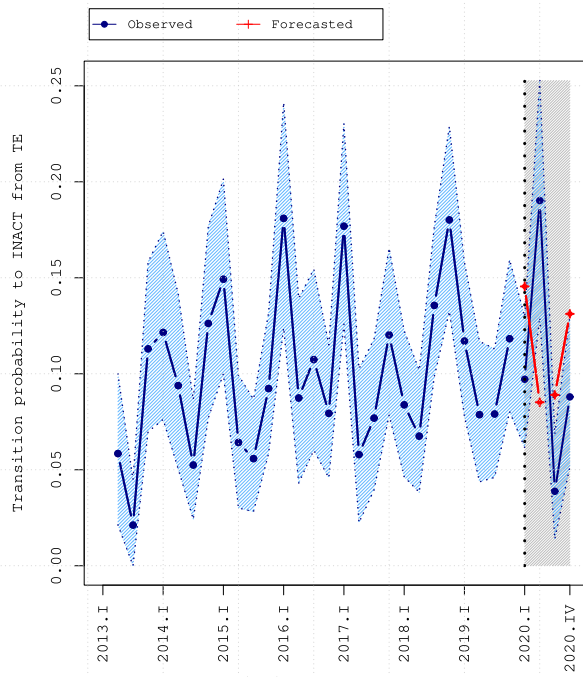


(d) North.

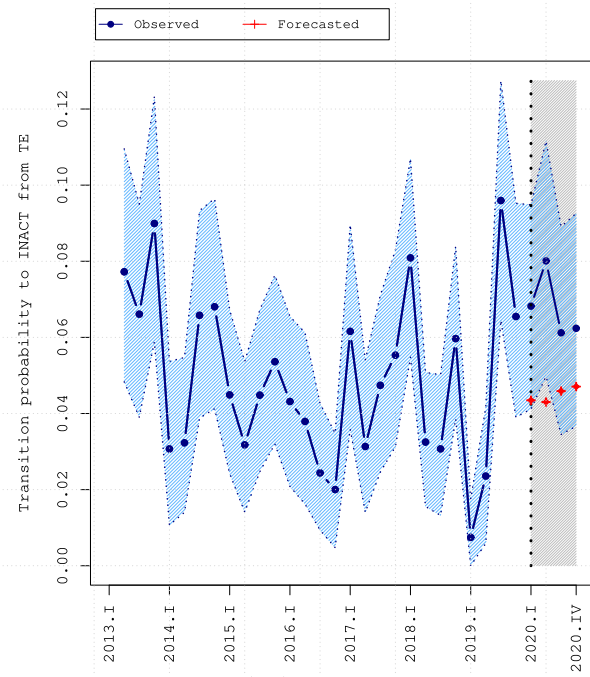
**Fig. 15.** Transition probabilities of males from unemployment to the inactive state by age groups.

*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## Age 30-39.

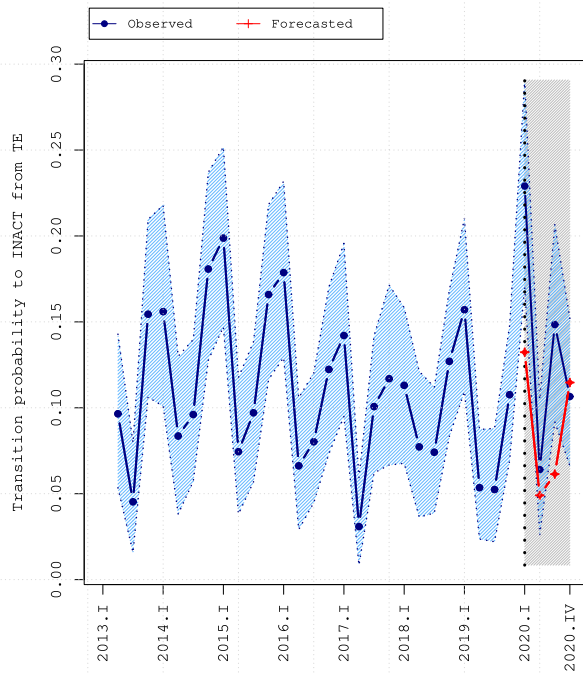


(a) South.

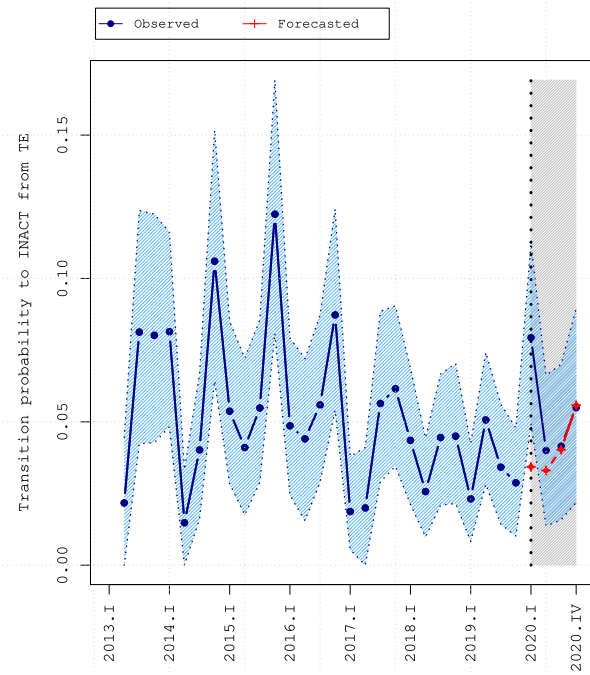


(b) North.

## Age 40-49.



(c) South.



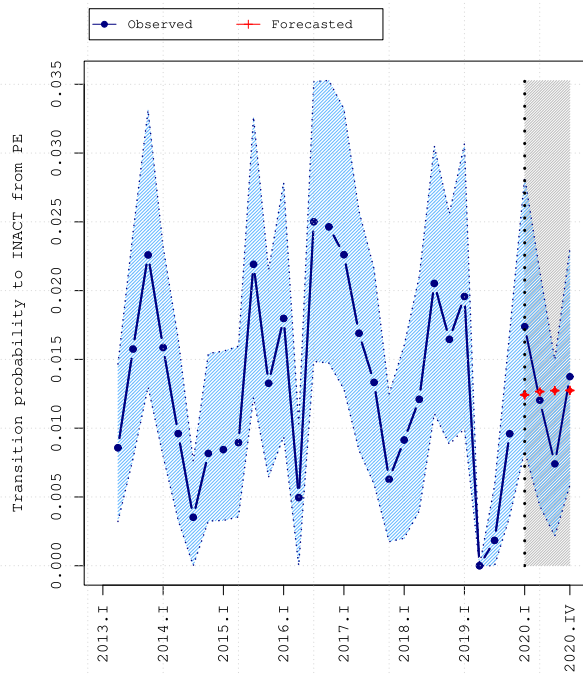
(d) North.

**Fig. 16.** Transition probabilities of males from temporary employment to the inactive state by age groups.

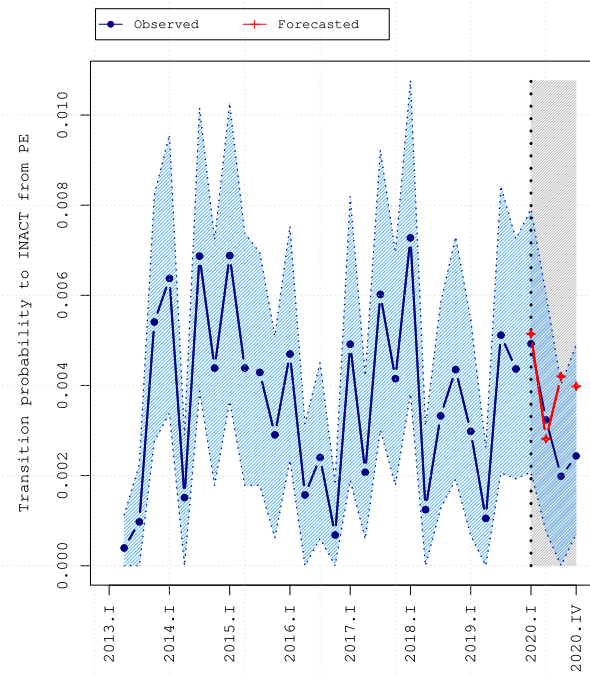
*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).



## Age 30-39.

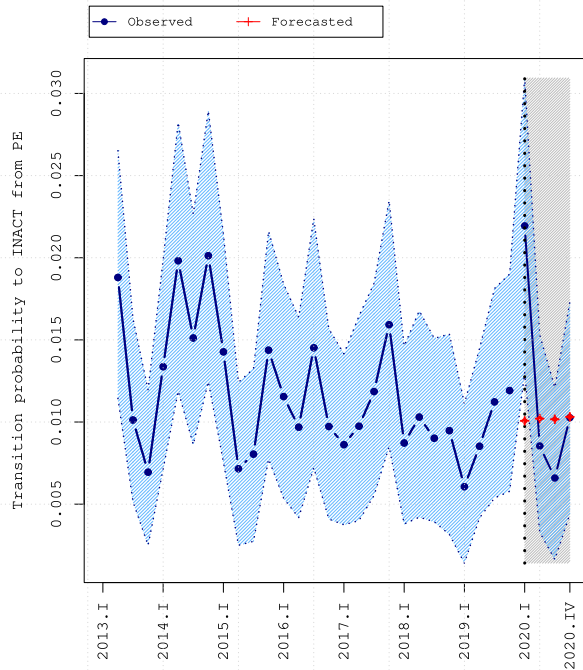


(a) Male South.

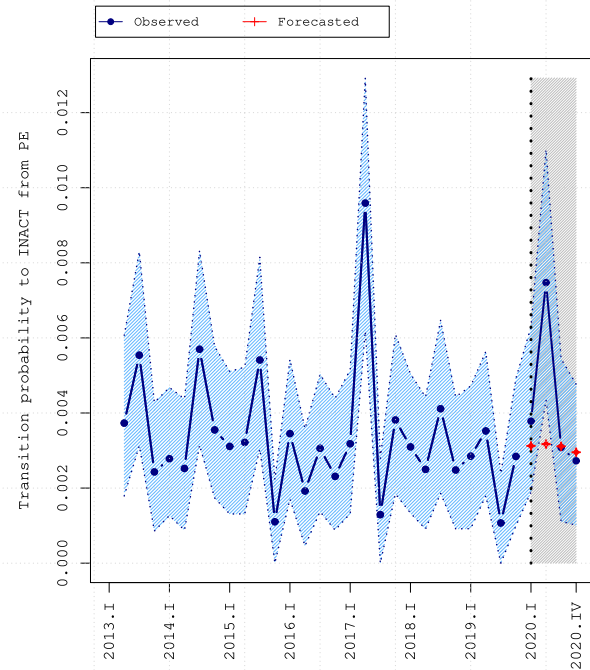


(b) Male North.

## Age 40-49.



(c) Male South.



(d) Male North.

**Fig. 17.** Transition probabilities of males from permanent employment to the inactive state by age groups.

*Note:* The forecasted transition probabilities are computed using a combination of four forecasting models (ETS, TSLM, THETAF, and ARIMA) (Panagiotelis et al., 2021) in the period 2013 (quarter I)- 2019 (quarter IV). Confidence intervals at 90% are computed using 1000 bootstraps and reported in parenthesis. The gray area identifies the COVID period. North includes regions in the North and the Center. *Source:* LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## Appendix F. Household size by categories of individuals

Table 12

Percentage of females with at least one child below the age of 11 by geographical area and employment status in 2020.

	Age 30–39		Age 40–49	
	North	South	North	South
Permanent	46.1	20.5	56.1	29.0
Temporary	7.9	6.4	5.6	5.8
Self-employed	8.1	6.5	11.1	9.4
Unemployed	5.4	8.5	4.1	6.9
<b>Inactive</b>	<b>31.8</b>	<b>57.1</b>	<b>22.3</b>	<b>48.3</b>
Total (in 000s)	1261	715	1188	557

Note: North includes regions in the North and the Center. Source: ELFS data.

## Appendix G. Distribution of workers by sector

Table 13

Distribution of workers by sector in 2019.

	Females 30–39		Males 30–39	
	South	North	South	North
Agriculture	22,944	9879	72,711	57,287
Industry	28,505	245,513	151,164	561,974
Constructions	3652	25,569	96,395	207,688
Commerce	89,911	247,142	168,699	251,949
Hotels and restaurants	38,826	111,932	47,009	113,679
Transport	7061	50,319	62,694	135,119
Communications	4708	25,661	23,436	104,134
Finance	13,598	69,859	11,318	54,810
Real estate	82,127	274,795	86,161	251,191
Public administration	7797	14,500	32,488	69,909
Education and health	110,635	368,974	51,503	118,223
Others	73,041	151,200	46,293	80,096

Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

Table 14

Distribution of workers by sector in 2019 (%).

	Females 30–39		Males 30–39	
	South	North	South	North
Agriculture	0.05	0.01	0.09	0.03
Industry	0.06	0.15	0.18	0.28
Constructions	0.01	0.02	0.11	0.10
Commerce	0.19	0.15	0.20	0.13
Hotels and restaurants	0.08	0.07	0.06	0.06
Transport	0.01	0.03	0.07	0.07
Communications	0.01	0.02	0.03	0.05
Finance	0.03	0.04	0.01	0.03
Real estate	0.17	0.17	0.10	0.13
Public administration	0.02	0.01	0.04	0.03
Education and health	0.23	0.23	0.06	0.06
Others	0.15	0.09	0.05	0.04
All	1	1	1	1

Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

## Appendix H. Logit estimates

Table 15

Odds-ratios of being active next quarter for an individual **currently active** in the labour market (**females age 30–39**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap95%	95%	97.5%
COVID × North × Household members > 2	0.445	0.470	<b>0.690</b>	0.964	1.035
Constant	5.726	5.960	<b>7.562</b>	9.600	10.040
2014	0.887	0.907	1.025	1.147	1.171
2015	0.967	0.989	1.118	1.251	1.283
2016	0.926	0.948	1.069	1.193	1.220
2017	1.016	1.043	1.177	1.316	1.346
2018	1.072	1.097	1.244	1.405	1.443
2019	0.691	0.720	0.887	1.067	1.112
2020	0.475	0.509	0.886	1.436	1.574
Quarter II	0.814	0.827	0.908	0.991	1.009
Quarter III	0.667	0.680	<b>0.746</b>	0.819	0.829
Quarter IV	0.865	0.880	0.966	1.057	1.070
EU citizen	0.939	0.960	1.109	1.290	1.327
No EU citizen	0.789	0.805	0.915	1.040	1.066
Industry	2.379	2.450	<b>2.984</b>	3.542	3.676
Constructions	1.915	2.015	<b>2.886</b>	3.991	4.294
Commerce	2.667	2.753	<b>3.303</b>	3.923	4.036
Hotels and restaurants	1.130	1.170	<b>1.400</b>	1.672	1.701
Transport	2.382	2.486	<b>3.377</b>	4.555	4.792
Communications	2.210	2.319	<b>3.226</b>	4.394	4.700
Finance	3.385	3.619	<b>4.917</b>	6.608	7.105
Real estate	2.450	2.539	<b>3.053</b>	3.631	3.749
Public administration	3.276	3.492	<b>5.111</b>	7.299	7.907
Education and health	1.709	1.760	<b>2.077</b>	2.457	2.537
Others	1.574	1.624	<b>1.958</b>	2.320	2.388
Primary education	0.551	0.564	<b>0.629</b>	0.694	0.705
Secondary education	0.772	0.785	<b>0.862</b>	0.943	0.959
North	1.553	1.595	<b>1.836</b>	2.094	2.139
Household members > 2	0.592	0.610	<b>0.705</b>	0.804	0.819
North × Household members > 2	0.833	0.856	1.009	1.181	1.222
COVID × EU citizen	0.724	0.767	1.100	1.511	1.643
COVID × No EU citizen	0.775	0.804	1.081	1.408	1.486
COVID × Industry	0.358	0.393	0.674	1.014	1.098
COVID × Constructions	0.175	0.204	0.548	1.194	1.412
COVID × Commerce	0.295	0.344	<b>0.572</b>	0.861	0.936
COVID × Hotels and restaurants	0.218	0.247	<b>0.411</b>	0.619	0.665
COVID × Transport	0.161	0.179	<b>0.362</b>	0.624	0.700
COVID × Communications	0.307	0.358	0.800	1.488	1.745
COVID × Finance	0.381	0.442	1.076	2.068	2.614
COVID × Real estate	0.514	0.560	0.974	1.458	1.565
COVID × Public administration	0.594	0.668	2.422	5.852	6.747
COVID × Education and health	0.372	0.413	0.678	1.010	1.091
COVID × Others	0.425	0.458	0.777	1.168	1.265
COVID × Primary education	0.853	0.891	1.162	1.461	1.543
COVID × Secondary education	0.700	0.725	0.878	1.045	1.073
COVID × North	0.688	0.730	1.014	1.356	1.420
COVID × Household members > 2	0.939	0.993	1.379	1.811	1.912
Observations	57264				

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Table 16**

Odds-ratios of being inactive next quarter for an individual **currently inactive** in the labour market (**females age 30–39**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap	95%	97.5%
COVID × North × Household members> 2	0.729	0.774	1.025	1.345	1.415
Constant	0.945	0.968	1.074	1.189	1.215
2014	0.857	0.870	0.938	1.011	1.026
2015	0.931	0.948	1.022	1.101	1.119
2016	0.895	0.906	0.981	1.054	1.073
2017	0.908	0.918	0.993	1.076	1.092
2018	0.962	0.974	1.052	1.135	1.153
2019	0.960	0.971	1.054	1.140	1.156
2020	0.763	0.807	1.007	1.234	1.285
Quarter II	0.983	0.993	1.050	1.106	1.118
Quarter III	1.064	1.076	<b>1.137</b>	1.201	1.211
Quarter IV	0.858	0.868	<b>0.915</b>	0.962	0.974
EU citizen	0.975	0.988	1.074	1.165	1.180
No EU citizen	1.333	1.348	<b>1.434</b>	1.527	1.545
Primary education	2.246	2.265	<b>2.398</b>	2.531	2.556
Secondary education	1.545	1.556	<b>1.644</b>	1.731	1.752
North	0.569	0.577	<b>0.630</b>	0.683	0.694
Household members> 2	1.676	1.699	<b>1.827</b>	1.961	1.984
North × Household members> 2	1.030	1.047	<b>1.156</b>	1.270	1.289
COVID × EU citizen	0.647	0.669	0.840	1.045	1.091
COVID × No EU citizen	0.949	0.981	1.189	1.425	1.469
COVID × Primary education	0.833	0.858	1.021	1.195	1.226
COVID × Secondary education	0.767	0.789	0.914	1.055	1.089
COVID × North	0.833	0.866	1.111	1.406	1.470
COVID × Household members> 2	0.854	0.892	1.098	1.331	1.366
Observations			44428		

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Table 17**

Odds-ratios of being active next quarter for an individual **currently active** in the labour market (**males aged 30–39**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap	95%	97.5%
COVID × North or Center × Household members> 2	0.465	0.499	0.721	0.999	1.080
Constant	10.539	10.948	<b>14.275</b>	18.155	18.864
2014	0.913	0.933	1.070	1.212	1.237
2015	0.877	0.901	1.034	1.173	1.198
2016	1.046	1.070	<b>1.228</b>	1.406	1.444
2017	1.064	1.086	<b>1.251</b>	1.432	1.469
2018	0.971	0.993	1.147	1.305	1.332
2019	1.080	1.125	<b>1.398</b>	1.729	1.813
2020	0.892	0.972	1.690	2.814	3.014
Quarter II	0.933	0.960	1.058	1.163	1.180
Quarter III	1.241	1.269	<b>1.408</b>	1.558	1.588
Quarter IV	0.935	0.952	1.050	1.155	1.172
EU citizen	0.586	0.599	<b>0.694</b>	0.809	0.832
No EU citizen	0.833	0.852	0.961	1.080	1.111
Industry	1.960	2.018	<b>2.363</b>	2.731	2.828
Constructions	0.927	0.956	1.116	1.286	1.311
Commerce	2.063	2.135	<b>2.545</b>	3.003	3.104
Hotels and restaurants	0.593	0.610	<b>0.723</b>	0.838	0.861
Transport	1.829	1.892	<b>2.352</b>	2.881	2.999
Communications	1.865	1.965	<b>2.730</b>	3.714	3.956
Finance	3.046	3.268	<b>5.576</b>	9.073	10.117
Real estate	1.543	1.589	<b>1.934</b>	2.306	2.412
Public administration	3.965	4.168	<b>5.869</b>	8.097	8.713
Education and health	1.028	1.071	<b>1.336</b>	1.670	1.731
Others	0.884	0.918	1.112	1.348	1.400
Primary education	0.433	0.446	<b>0.516</b>	0.595	0.609
Secondary education	0.641	0.660	<b>0.753</b>	0.862	0.877
North	1.632	1.670	<b>1.935</b>	2.204	2.258
Household members> 2	0.703	0.721	<b>0.822</b>	0.931	0.949
North × Household members> 2	1.024	1.062	<b>1.264</b>	1.482	1.524
COVID × EU citizen	0.512	0.552	0.781	1.075	1.125
COVID × No EU citizen	0.621	0.643	0.846	1.070	1.131
COVID × Industry	0.160	0.177	<b>0.288</b>	0.415	0.443
COVID × Constructions	0.259	0.294	<b>0.504</b>	0.749	0.802
COVID × Commerce	0.152	0.165	<b>0.275</b>	0.402	0.425
COVID × Hotels and restaurants	0.144	0.154	<b>0.259</b>	0.383	0.423
COVID × Transport	0.169	0.184	<b>0.329</b>	0.528	0.565
COVID × Communications	0.133	0.144	<b>0.306</b>	0.552	0.645
COVID × Finance	0.159	0.190	0.731	1.792	2.155
COVID × Real estate	0.203	0.228	<b>0.390</b>	0.597	0.648
COVID × Public administration	0.239	0.287	0.915	2.437	2.894
COVID × Education and health	0.195	0.224	<b>0.413</b>	0.663	0.725
COVID × Others	0.257	0.288	<b>0.525</b>	0.840	0.908
COVID × Primary education	0.914	0.970	1.352	1.763	1.875
COVID × Secondary education	0.710	0.745	0.996	1.276	1.330
COVID × North	0.651	0.688	0.941	1.232	1.304
COVID × Household members> 2	0.848	0.895	1.211	1.559	1.618
Observations			71126		

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Table 18**

Odds-ratios of being inactive next quarter for an individual **currently inactive** in the labour market (**males aged 30–39**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap	95%	97.5%
COVID × North × Household members> 2	0.548	0.578	0.807	1.097	1.183
Constant	0.665	0.679	<b>0.781</b>	0.890	0.905
2014	1.019	1.036	<b>1.142</b>	1.253	1.270
2015	1.077	1.097	<b>1.212</b>	1.335	1.361
2016	1.111	1.132	<b>1.246</b>	1.370	1.396
2017	0.976	0.995	1.102	1.210	1.232
2018	1.165	1.189	<b>1.323</b>	1.460	1.485
2019	1.189	1.218	<b>1.348</b>	1.493	1.522
2020	1.334	1.411	<b>1.916</b>	2.521	2.647
Quarter II	0.869	0.880	0.945	1.010	1.025
Quarter III	0.926	0.939	1.005	1.076	1.091
Quarter IV	0.910	0.922	0.991	1.068	1.083
EU citizen	0.593	0.608	<b>0.699</b>	0.799	0.819
No EU citizen	0.611	0.622	<b>0.683</b>	0.744	0.753
Primary education	1.071	1.093	<b>1.187</b>	1.278	1.293
Secondary education	0.960	0.976	1.064	1.151	1.169
North	0.665	0.677	<b>0.744</b>	0.815	0.831
Household members> 2	0.853	0.864	0.934	1.005	1.017
North × Household members> 2	1.021	1.048	<b>1.175</b>	1.314	1.339
COVID × EU citizen	0.911	0.971	1.526	2.191	2.343
COVID × No EU citizen	0.671	0.705	0.917	1.161	1.215
COVID × Primary education	0.502	0.527	<b>0.677</b>	0.842	0.883
COVID × Secondary education	0.510	0.532	<b>0.679</b>	0.848	0.887
COVID × North	0.664	0.696	0.917	1.177	1.239
COVID × Household members> 2	0.967	1.021	1.278	1.568	1.641
Observations			20358		

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

**Table 19**

Odds-ratios of being active next quarter for an individual **currently active** in the labour market (**females aged 40–49**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap	95%	97.5%
COVID × North × Household members> 2	0.554	0.601	0.880	1.234	1.312
Constant	4.605	4.788	<b>5.982</b>	7.370	7.703
2014	0.990	1.012	1.136	1.270	1.298
2015	0.989	1.009	1.144	1.282	1.312
2016	1.025	1.048	<b>1.176</b>	1.319	1.354
2017	1.073	1.100	<b>1.240</b>	1.395	1.433
2018	1.036	1.065	<b>1.205</b>	1.353	1.381
2019	0.919	0.950	1.147	1.375	1.433
2020	0.855	0.936	1.520	2.309	2.506
Quarter II	0.944	0.954	1.037	1.121	1.141
Quarter III	0.815	0.831	<b>0.906</b>	0.981	0.998
Quarter IV	0.985	1.003	1.092	1.187	1.205
EU citizen	0.724	0.742	0.859	0.985	1.021
No EU citizen	0.736	0.752	<b>0.854</b>	0.966	0.999
Industry	3.128	3.246	<b>3.766</b>	4.330	4.456
Constructions	1.405	1.470	<b>1.934</b>	2.477	2.660
Commerce	3.873	4.010	<b>4.658</b>	5.375	5.538
Hotels and restaurants	1.273	1.300	<b>1.497</b>	1.705	1.753
Transport	3.142	3.268	<b>4.311</b>	5.622	5.900
Communications	5.029	5.303	<b>7.679</b>	11.013	12.127
Finance	7.846	8.254	<b>11.981</b>	17.406	18.679
Real estate	2.964	3.049	<b>3.527</b>	4.038	4.169
Public administration	11.861	12.661	<b>18.641</b>	27.033	29.429
Education and health	3.861	3.925	<b>4.535</b>	5.182	5.306
Others	2.120	2.166	<b>2.503</b>	2.878	2.952
Primary education	0.558	0.567	<b>0.631</b>	0.698	0.716
Secondary education	0.810	0.826	0.910	0.999	1.015
North	1.386	1.429	<b>1.652</b>	1.875	1.926
Household members> 2	0.628	0.650	<b>0.745</b>	0.849	0.870
North × Household members> 2	1.189	1.232	<b>1.438</b>	1.676	1.749
COVID × EU citizen	0.898	0.947	1.319	1.822	1.946
COVID × No EU citizen	0.814	0.856	1.120	1.457	1.507
COVID × Industry	0.476	0.517	0.737	1.008	1.064
COVID × Constructions	0.518	0.567	1.105	1.976	2.341
COVID × Commerce	0.363	0.388	<b>0.554</b>	0.753	0.793
COVID × Hotels and restaurants	0.260	0.279	<b>0.389</b>	0.530	0.568
COVID × Transport	0.329	0.368	<b>0.677</b>	1.148	1.289
COVID × Communications	0.230	0.276	0.660	1.343	1.644
COVID × Finance	0.164	0.183	0.366	0.644	0.735
COVID × Real estate	0.432	0.467	0.673	0.931	0.992
COVID × Public administration	0.259	0.295	0.829	2.006	2.849
COVID × Education and health	0.368	0.398	<b>0.569</b>	0.775	0.823
COVID × Others	0.515	0.547	0.778	1.053	1.119
COVID × Primary education	0.614	0.643	0.809	1.001	1.045
COVID × Secondary education	0.495	0.514	<b>0.634</b>	0.761	0.787
COVID × North	0.496	0.537	0.740	0.989	1.059
COVID × Household members> 2	0.773	0.820	1.144	1.519	1.616
Observations			87060		

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

Table 20

Odds-ratios of being active next quarter for an individual **currently active** in the labour market (**males aged 40–49**).

	C.I.	C.I.	Mean	C.I.	C.I.
	2.5%	5%	bootstrap	95%	97.5%
COVID × North × Household members > 2	0.729	0.775	1.112	1.530	1.657
Constant	11.186	11.632	<b>15.073</b>	18.974	19.979
2014	0.790	0.809	0.916	1.033	1.058
2015	0.866	0.895	1.020	1.153	1.189
2016	1.043	1.072	<b>1.217</b>	1.384	1.412
2017	1.057	1.090	<b>1.246</b>	1.423	1.456
2018	1.170	1.205	<b>1.375</b>	1.557	1.594
2019	1.089	1.145	<b>1.432</b>	1.780	1.862
2020	0.757	0.812	1.325	2.034	2.245
Quarter II	0.923	0.939	1.028	1.115	1.133
Quarter III	1.317	1.344	<b>1.482</b>	1.632	1.662
Quarter IV	1.015	1.032	<b>1.122</b>	1.220	1.242
EU citizen	0.432	0.443	<b>0.520</b>	0.614	0.637
No EU citizen	0.525	0.533	<b>0.599</b>	0.673	0.685
Industry	2.474	2.540	<b>2.914</b>	3.329	3.427
Constructions	1.061	1.087	<b>1.240</b>	1.404	1.436
Commerce	2.875	2.957	<b>3.498</b>	4.073	4.179
Hotels and restaurants	0.877	0.902	1.069	1.248	1.290
Transport	2.203	2.278	<b>2.749</b>	3.308	3.414
Communications	2.610	2.808	<b>3.999</b>	5.543	6.038
Finance	5.107	5.595	<b>9.654</b>	17.332	19.133
Real estate	1.799	1.870	<b>2.245</b>	2.691	2.776
Public administration	6.663	6.947	<b>9.523</b>	12.830	13.696
Education and health	1.999	2.076	<b>2.591</b>	3.213	3.354
Others	1.199	1.245	<b>1.492</b>	1.786	1.846
Primary education	0.336	0.346	<b>0.409</b>	0.479	0.491
Secondary education	0.536	0.559	<b>0.657</b>	0.765	0.787
North	1.878	1.919	<b>2.234</b>	2.569	2.635
Household members > 2	0.974	1.001	1.144	1.298	1.328
North × Household members > 2	0.886	0.914	1.088	1.272	1.306
COVID × EU citizen	0.973	1.042	1.483	2.087	2.251
COVID × No EU citizen	1.041	1.102	<b>1.440</b>	1.824	1.934
COVID × Industry	0.271	0.289	<b>0.397</b>	0.528	0.549
COVID × Constructions	0.471	0.503	0.713	0.957	1.039
COVID × Commerce	0.343	0.369	<b>0.551</b>	0.766	0.818
COVID × Hotels and restaurants	0.211	0.226	<b>0.333</b>	0.456	0.490
COVID × Transport	0.238	0.263	<b>0.400</b>	0.572	0.612
COVID × Communications	0.145	0.163	<b>0.317</b>	0.532	0.595
COVID × Finance	0.138	0.158	0.551	1.458	1.830
COVID × Real estate	0.467	0.506	0.794	1.157	1.269
COVID × Public administration	0.686	0.829	2.564	6.475	7.480
COVID × Education and health	0.328	0.367	0.616	0.960	1.058
COVID × Others	0.382	0.411	0.638	0.932	1.006
COVID × Primary education	0.671	0.716	1.004	1.338	1.422
COVID × Secondary education	0.571	0.613	0.851	1.128	1.220
COVID × North	0.523	0.551	0.755	1.002	1.067
COVID × Household members > 2	0.607	0.639	0.855	1.092	1.156
Observations			109226		

Note: North includes regions in the North and the Center. Source: LFS 3-month longitudinal data as provided by the Italian Institute of Statistics (ISTAT).

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